ANNUAL ILLUSTRATED REVIEW NUMBER

Rock Products

CEMENT ENGINEERING NEWS (Est. 1896)

THE OLDEST PUBLICATION IN ITS FIELD AND [illegible] RECOGNIZED AUTHORITY

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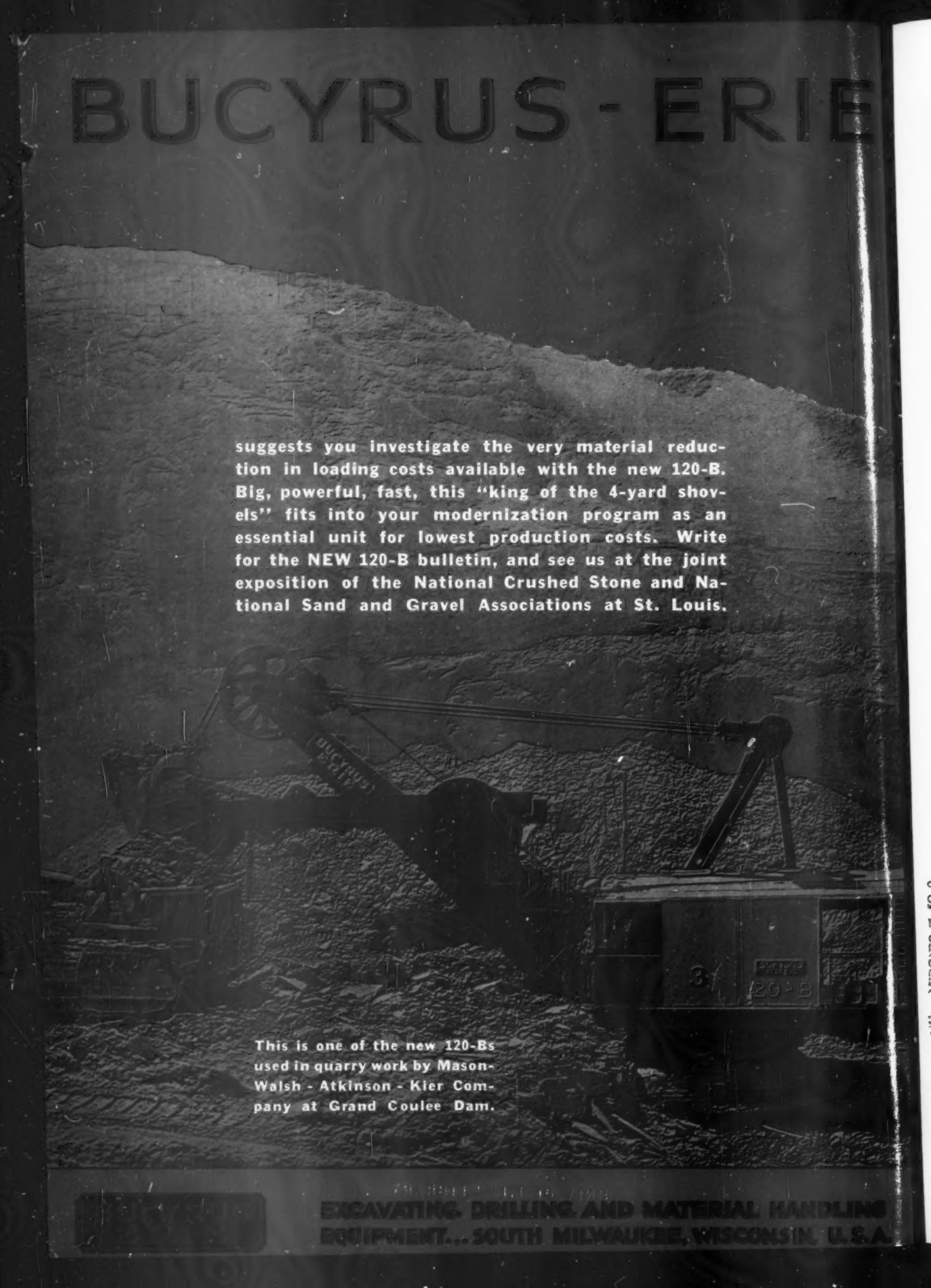

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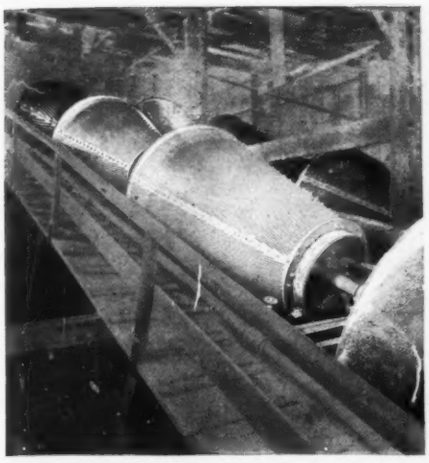
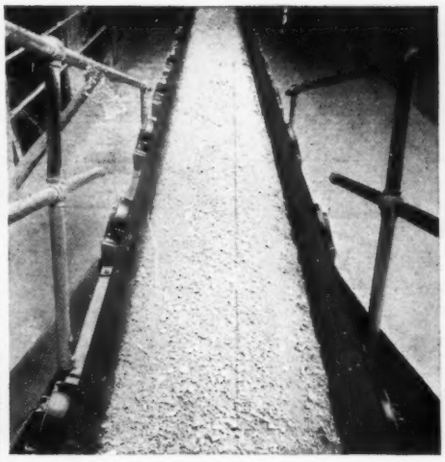
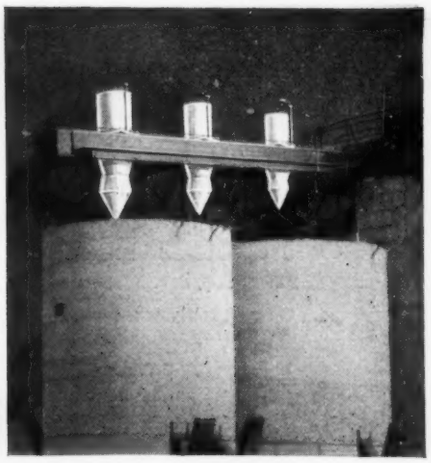
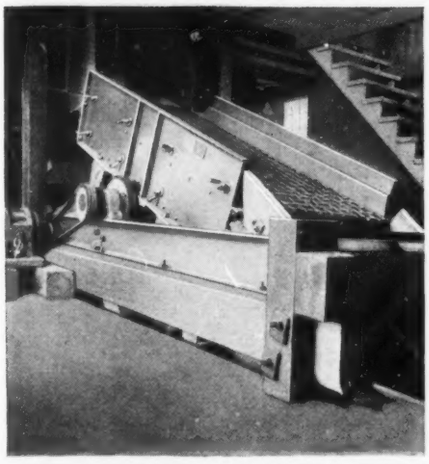

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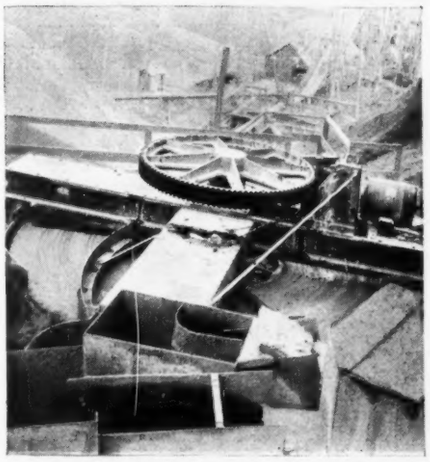

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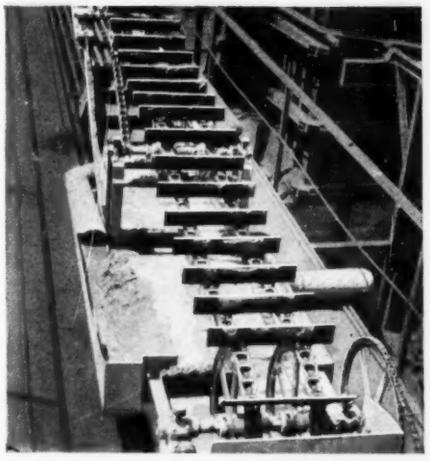
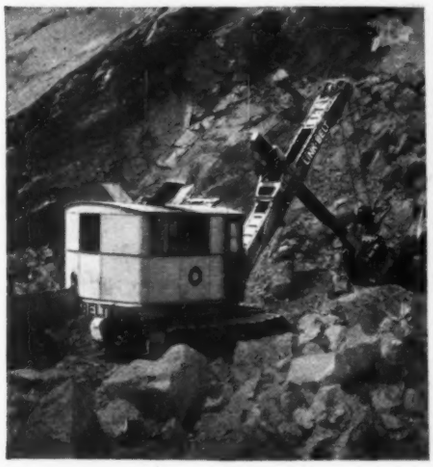
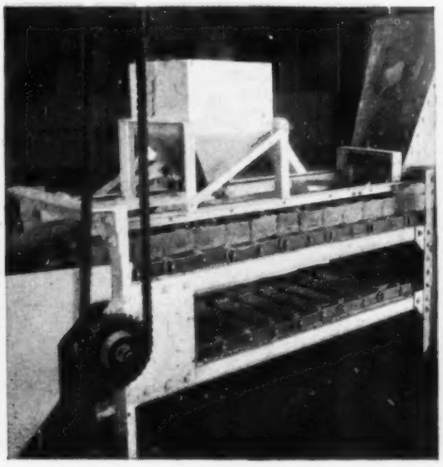

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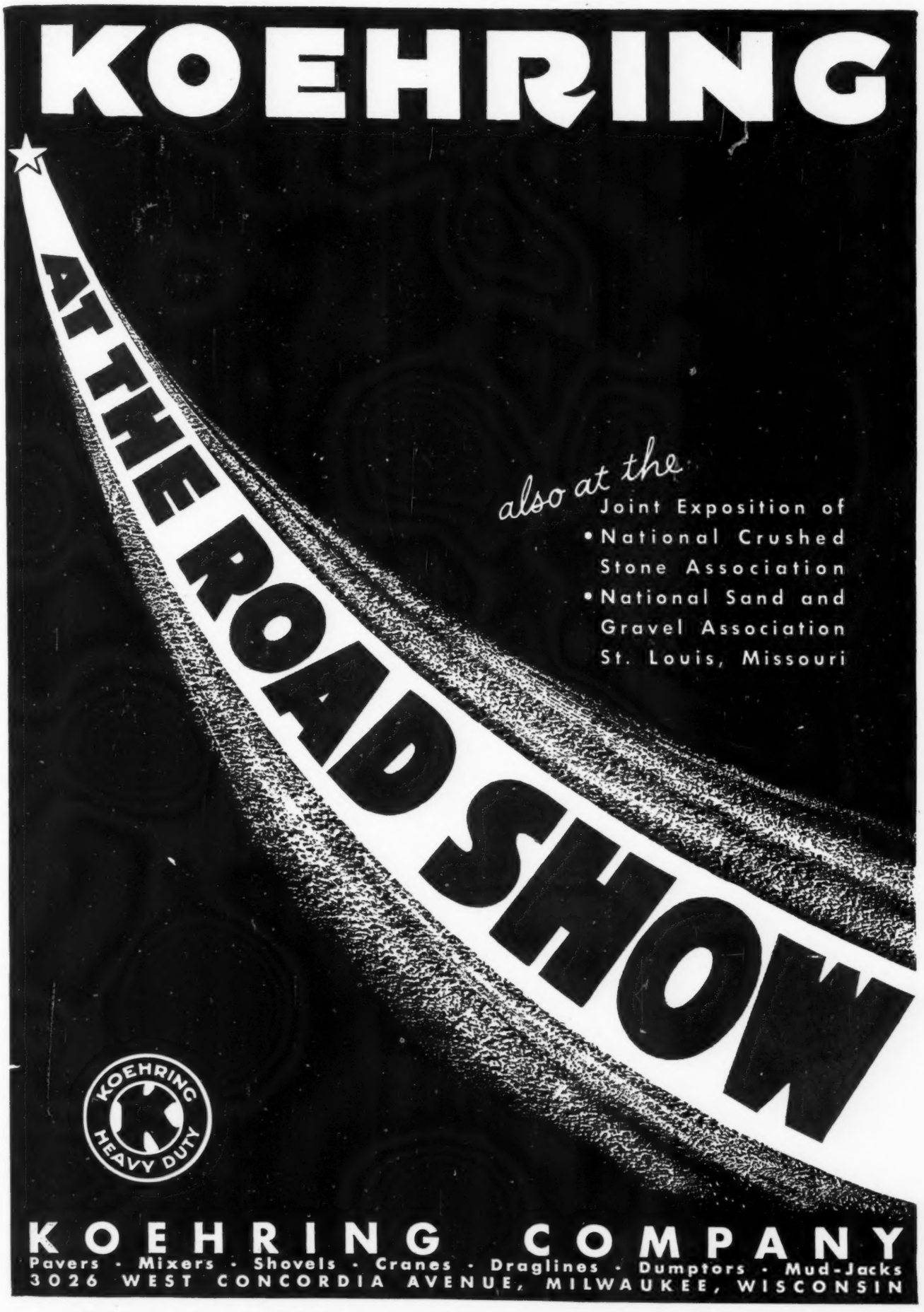
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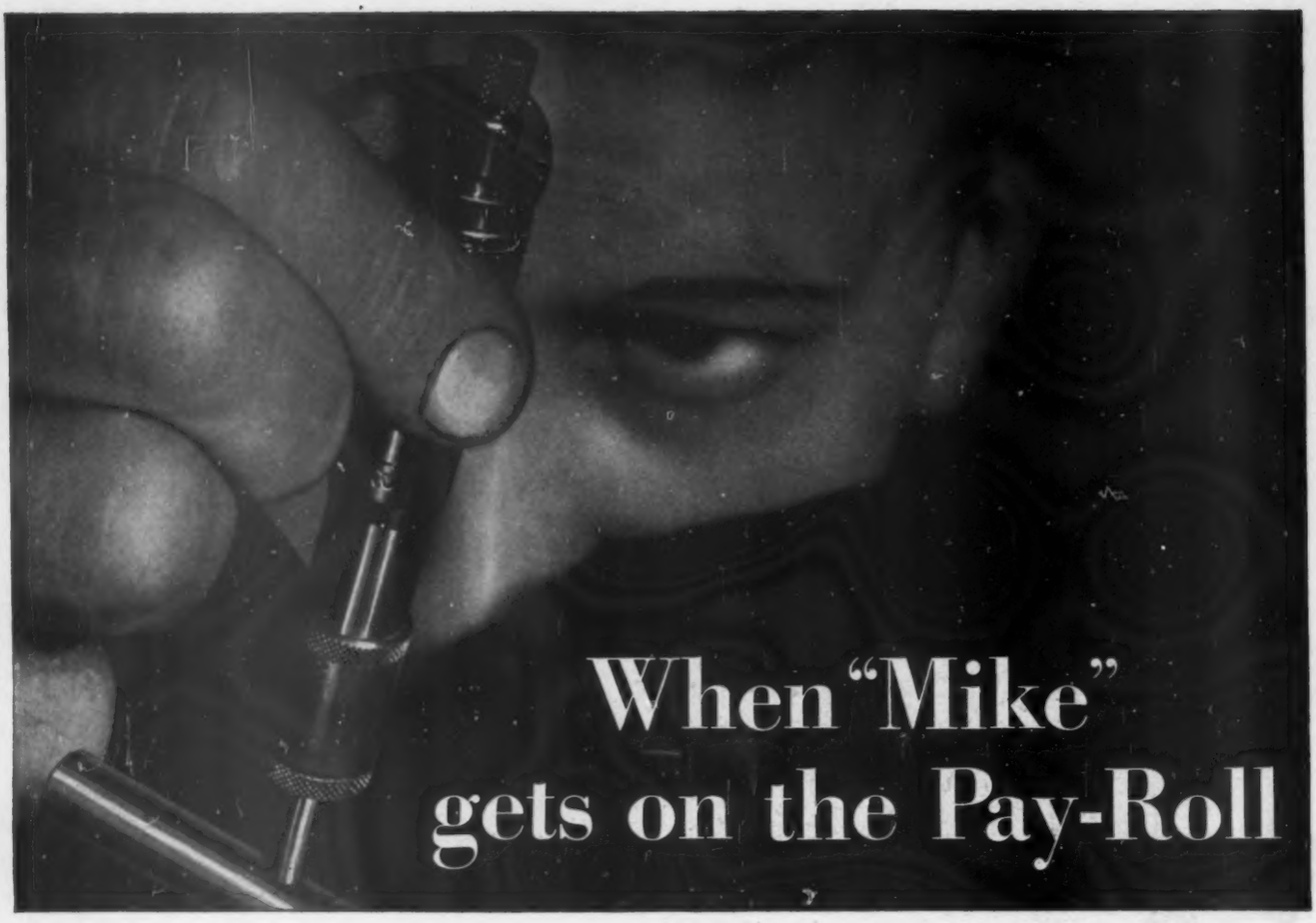

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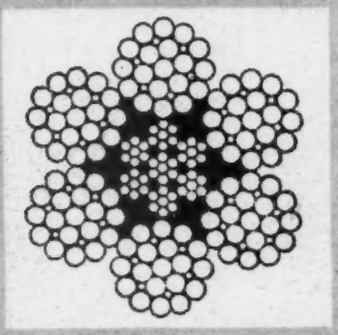

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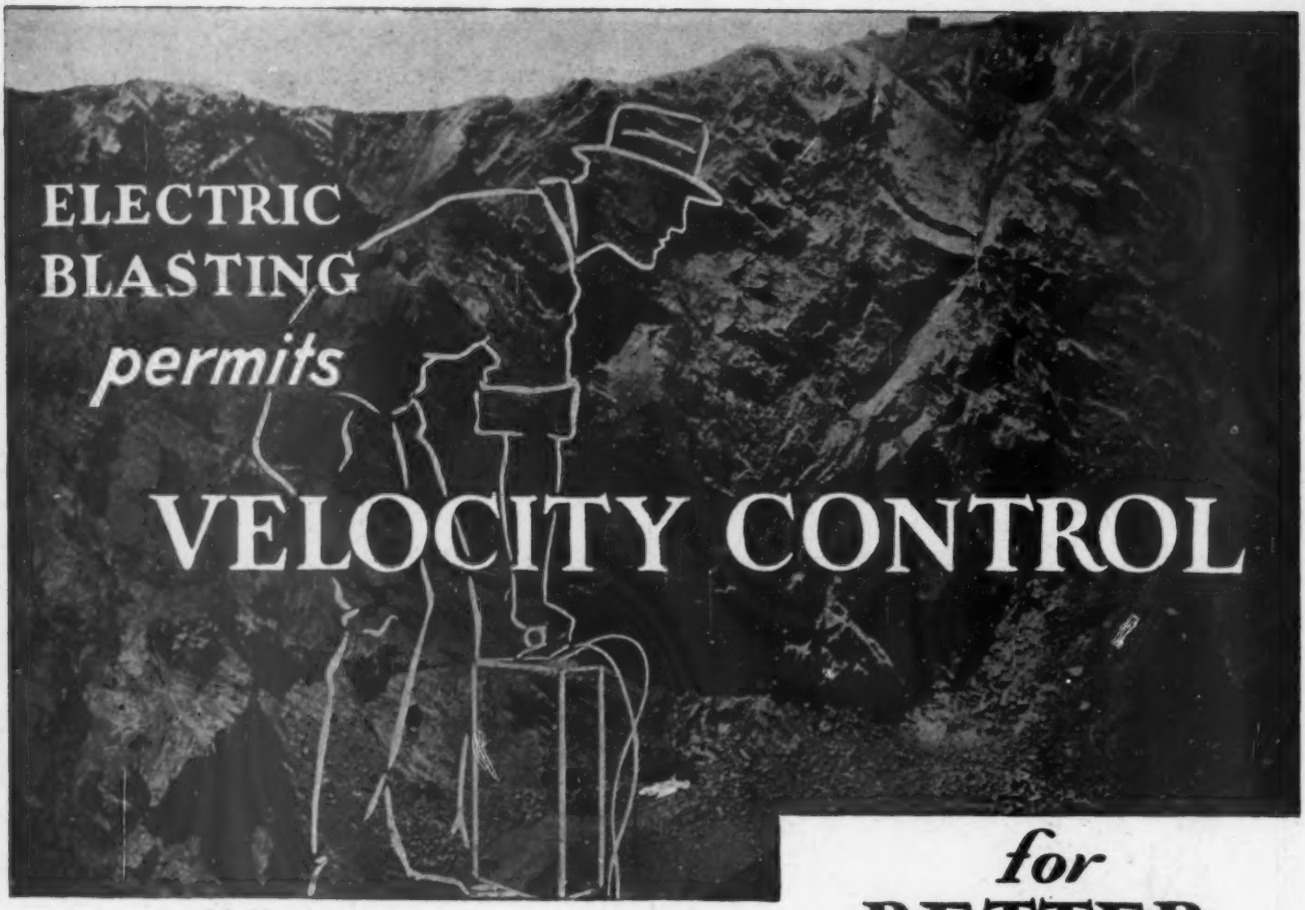

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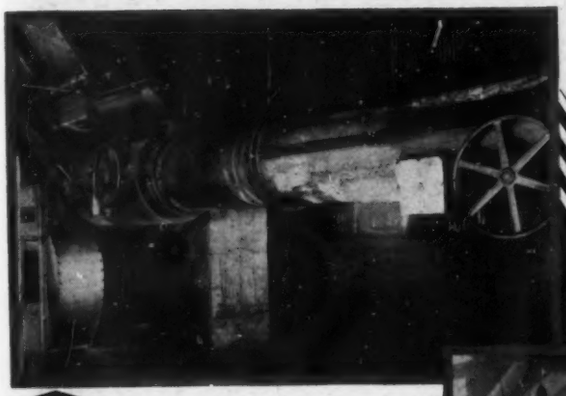

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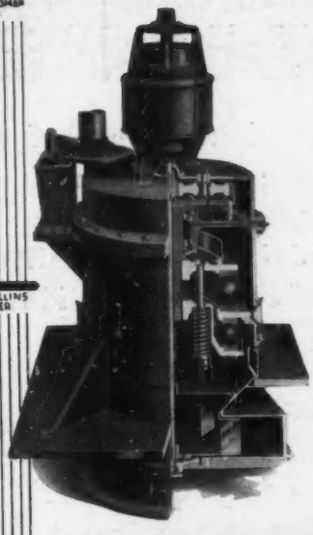

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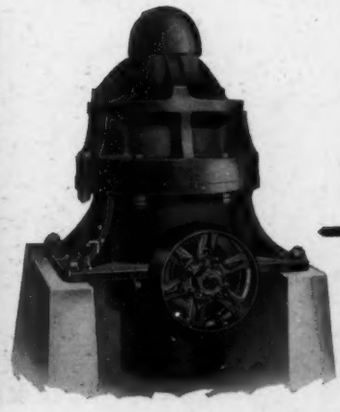

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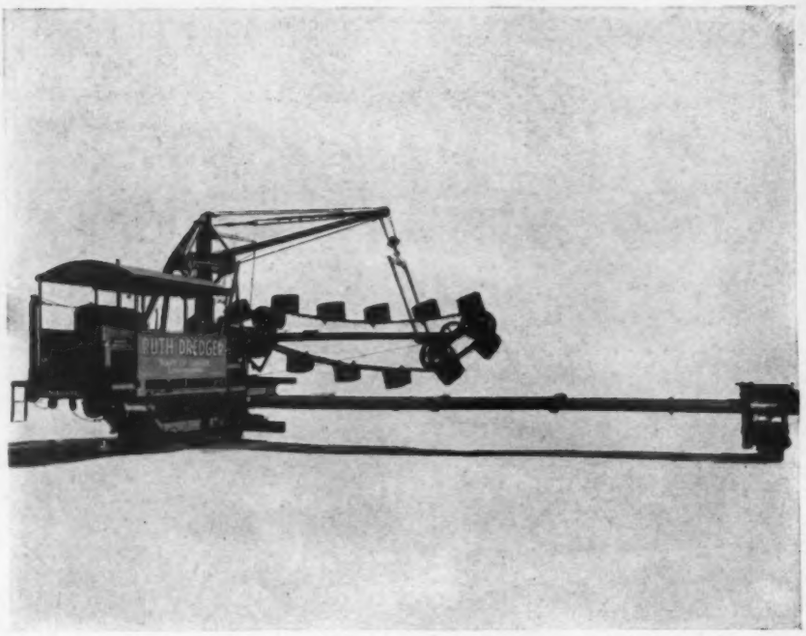

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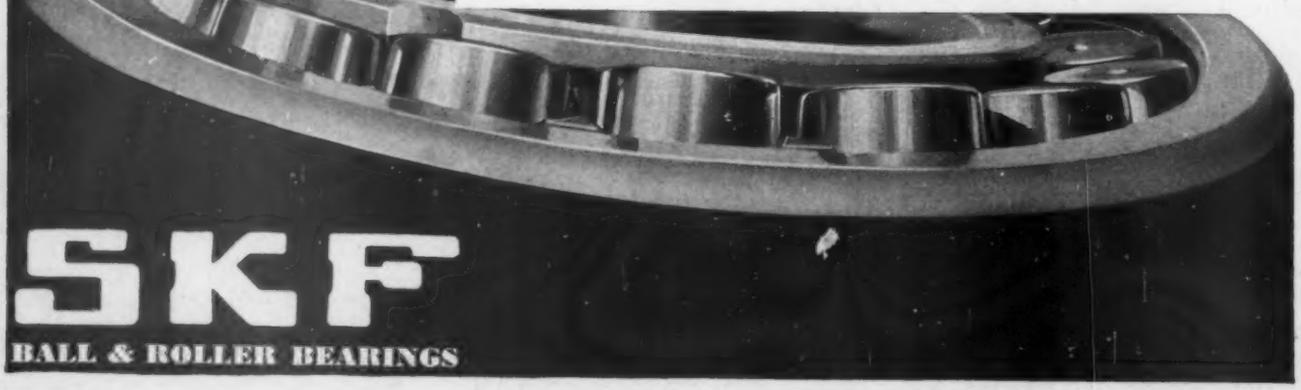

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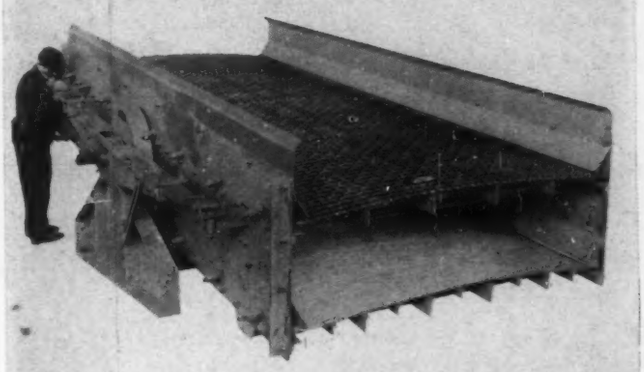

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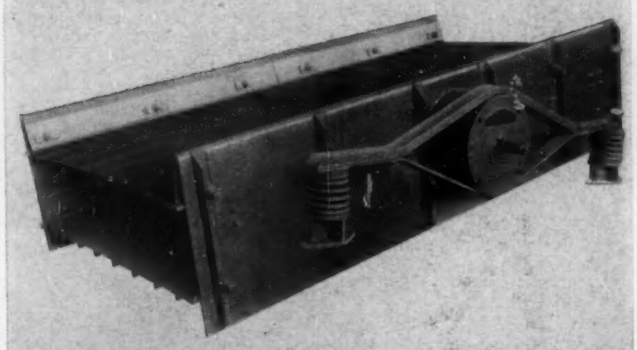

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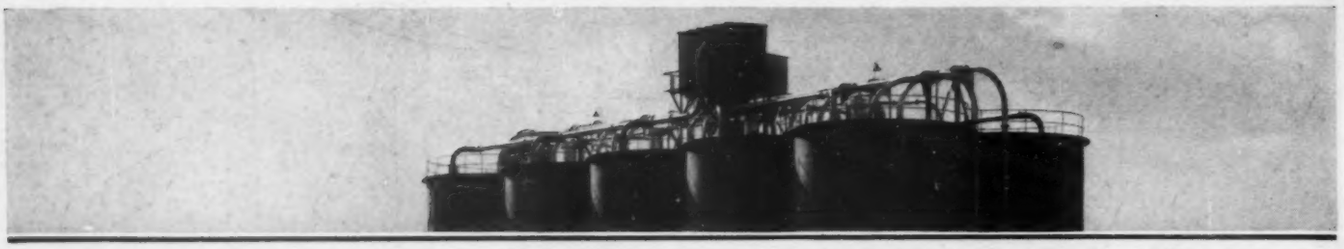

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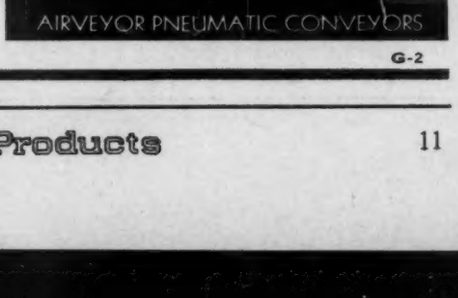
COMPRESSORS AND VACUUM PUMPS.

FULLER COMPRESSORS AND VACUUM PUMPS, single and two-stage—Compactness, light weight, and smoothness of operation are a few of the many advantages this type of compressor has to offer. They are available for pressures up to 125 lbs. and vacuums of 29.75", capacities of 20 to 1800 CFM.



AIRVEYOR PNEUMATIC CONVEYORS

THE AIRVEYOR—A pneumatic conveyor for fine, crushed, and granular materials, built in two types, Receiver type for granular and crushed materials carrying relatively little dust, and the Filter type, which handles dusty materials with absolute cleanliness. Each type may be applied in a wide variety of arrangements to meet specific problems. They are built in both stationary and portable or traveling types.

FLUXO PUMP—For conveying pulverized materials; especially adapted for long pumping distances.

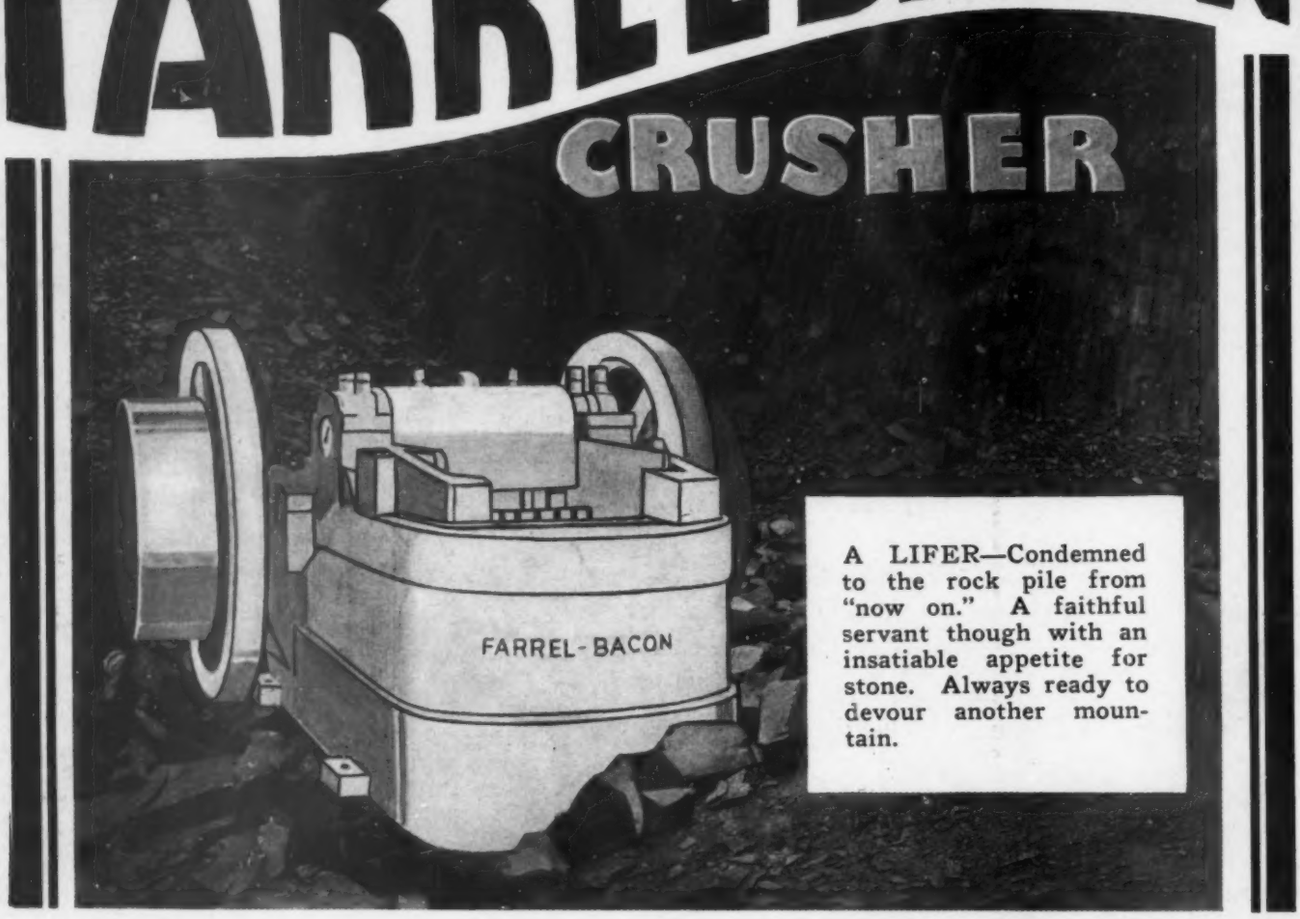
Fuller Company

CATASAUQUA, PENNA. U. S. A.

Chicago: 1118 Marquette Bldg. San Francisco: 564 Market Street

G-2

FARREL-BACON CRUSHER



A LIFER—Condemned to the rock pile from "now on." A faithful servant though with an insatiable appetite for stone. Always ready to devour another mountain.

A MOST PROFITABLE INVESTMENT

Where the crushing is toughest you'll find a Farrel—Regardless of whether it is new or thirty years in service, it will do the job every day, all day, year after year. These tough, rugged Crushers, backed by fifty-six years of actual experience, will outlast a lifetime!

Foresighted operators know that investment in expert knowledge of design and equipment earns greatest dividends. Today many of the foremost operators of the rock products industry have insured their success by utilizing Bacon engineering service and Bacon quarry equipment.

BACON SUPPLIES THE FOLLOWING EQUIPMENT

Breaker - secondary crushers, Reduction units, Laboratory crushers. Friction type roller screens. Vibrating screens. Belting. Bucket type elevators. Chutes. Complete crushing plants. Conveyors. Crushing rolls. Drives. Feeders. Gears. Screening plants. Scrubbers for sand, ore, and gravel. Speed reducers, etc.

Illustrated Book on Request

EARLE C. BACON *Inc.*

Engineers to the Stone Crushing Industry

17 JOHN ST., NEW YORK, N. Y.

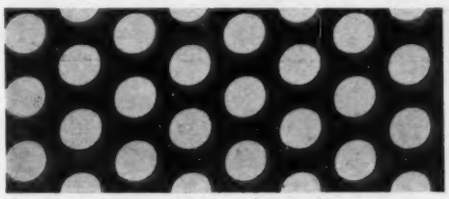
CROSS

PERFORATED PLATES

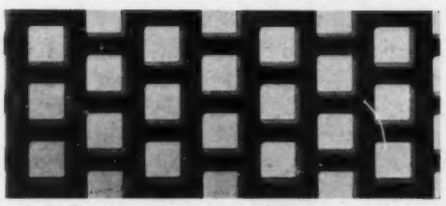
For Vibrating, Rotary and Shaking Screens

GIVE YOU THE EXACT OPENING YOU NEED
PLUS THE METAL YOU NEED
PLUS THE WORKMANSHIP YOU NEED
PLUS THE SERVICE YOU NEED.

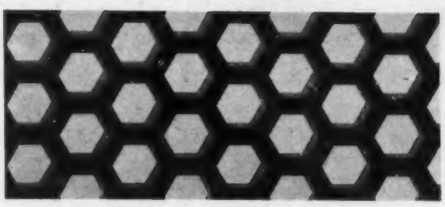
THE PLUS SIGN



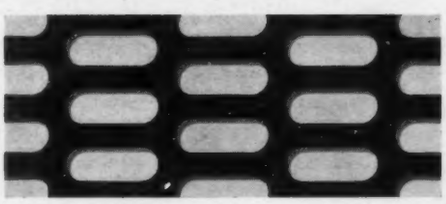
- ROUND holes, for most accurate sizing and longest wear.



- SQUARE holes, for a little more capacity than Round.



- HEXCREEN holes, for best combination of Accuracy, Capacity and Wear.



- SLOTTED holes, for special conditions.

Double-Corrugated and Heat Treated When Required

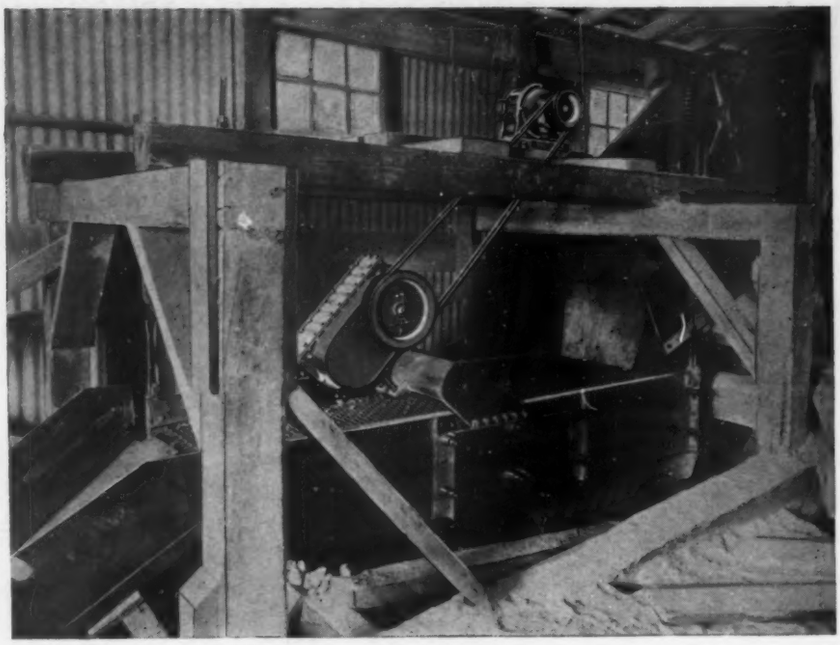
CROSS

ENGINEERING COMPANY

General Office and Plant

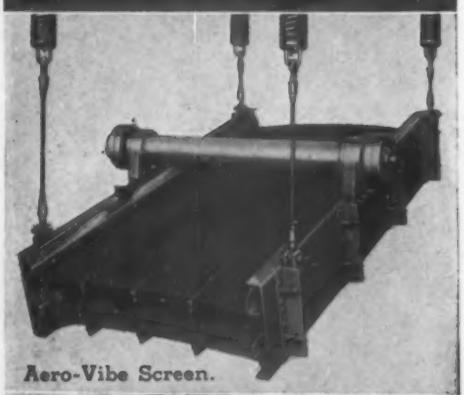
CARBONDALE, PA.

Sales Representatives in Principal Cities



3 Types

Which do You Need *for* Your Screening?



Aero-Vibe Screen.

Totally Enclosed Aero-Vibe Screen.

● Allis-Chalmers has now developed a third major type of screen, the LOW-HEAD Horizontal type. This screen, which is illustrated above was designed primarily to meet the demand for a vibrating unit for plants where there was little head room. It is installed in a horizontal plane, not inclined like most screens. Vibration is imparted to screening surfaces in such a way that the material on the screen is continuously thrown forward. This LOW-HEAD screen supplements the AERO-VIBE and CENTRIFUGAL types.

● AERO-VIBE screens have a rapid, adjustable vibrating motion produced by counterweighted wheels mounted on the drive shaft. They were developed for medium to fine size material and for rather limited tonnages.

● For heavy loads and maximum range of sizing, engineers recommend the CENTRIFUGAL type screen. Its screening action is positive and equally intense for all tonnages, being transmitted to the screen body or vibrating member by an eccentric shaft.

● Most Allis-Chalmers vibrating screens are suspended from the building structure by cables and springs. This method of installation confines the vibration or screening motion to the body and material on the screen deck, gives a better screening action and lowers installation cost.

● Allis-Chalmers engineers will be glad to recommend the type of screen best suited to your conditions. Write the nearest district office or the main plant at Milwaukee.

ALLIS-CHALMERS

Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin, U.S.A.

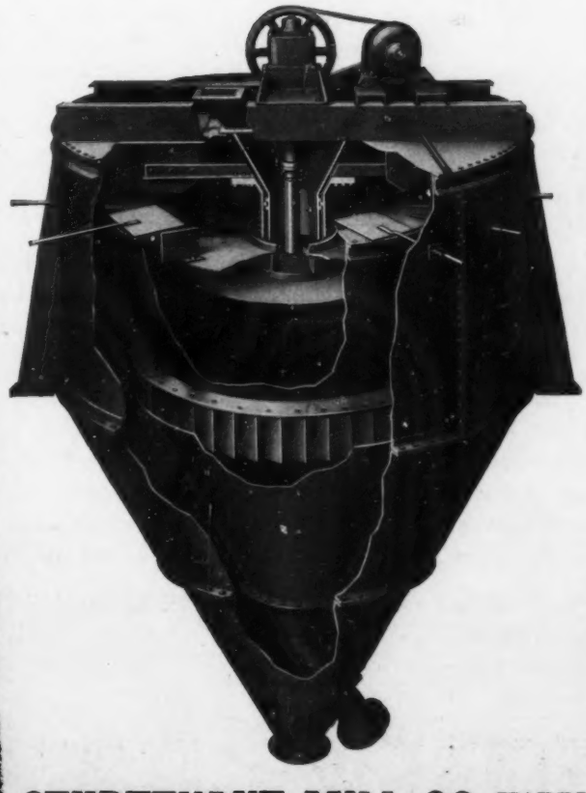
STURTEVANT

FOR

HIGH EARLY STRENGTH

PORTLAND CEMENT

INSTALL STURTEVANT AIR SEPARATORS



Lower Temperatures
Specific Surface Area
Particle Size Control

CEMENT OPERATORS!

If you are interested in quality cements, lower production costs and many other factors, we can help you.

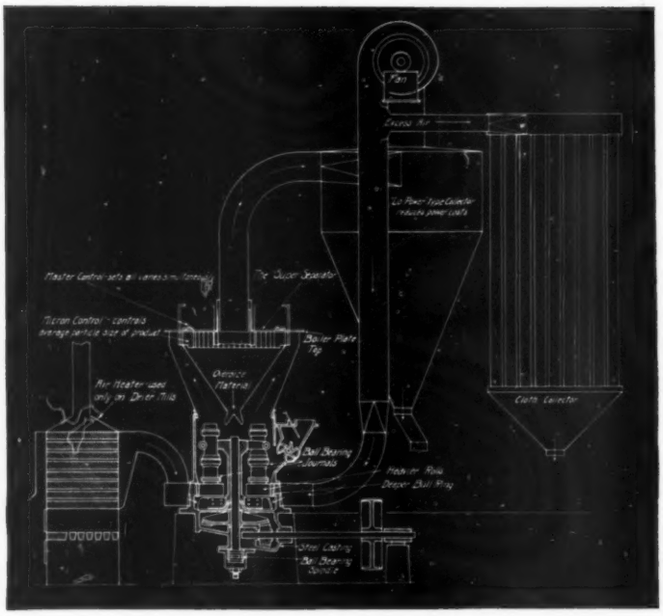
SILICA, LIMESTONE, LIME, GYPSUM AND OTHER NON-METALLIC INDUSTRIES.

Increased Tonnage and Particle Size Control with Reduced Costs.

YOUR INQUIRIES ENTAIL NO OBLIGATIONS

STURTEVANT MILL CO. HARRISON SQUARE **BOSTON, MASS.**

Better Roller Mills for Fine Grinding



100 to 400 mesh fineness.

Unusually accurate air separation.

Instantly changeable from one fineness to another.

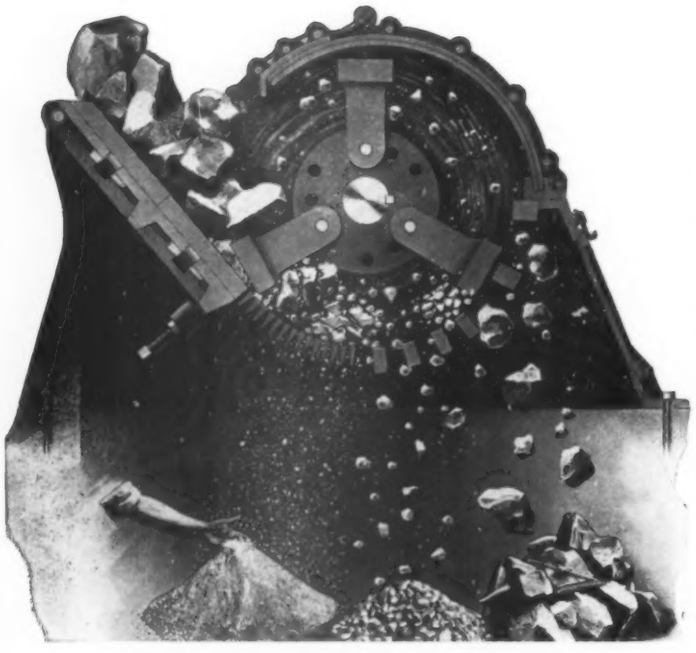
Steel castings at important points.

Ball bearing roller journals.

Dry and grind in one operation.

Lower fine grinding costs.

Better Hammer Crushers for Coarse Crushing



Crush power shovel loaded rock to commercial sizes in one operation.

One crusher does the work of three resulting in 50% to 75% smaller investment.

Handle wet or muddy rock.

Adjustable to make more or less fines.

Product is approximately cubular with no slivers or slabs.

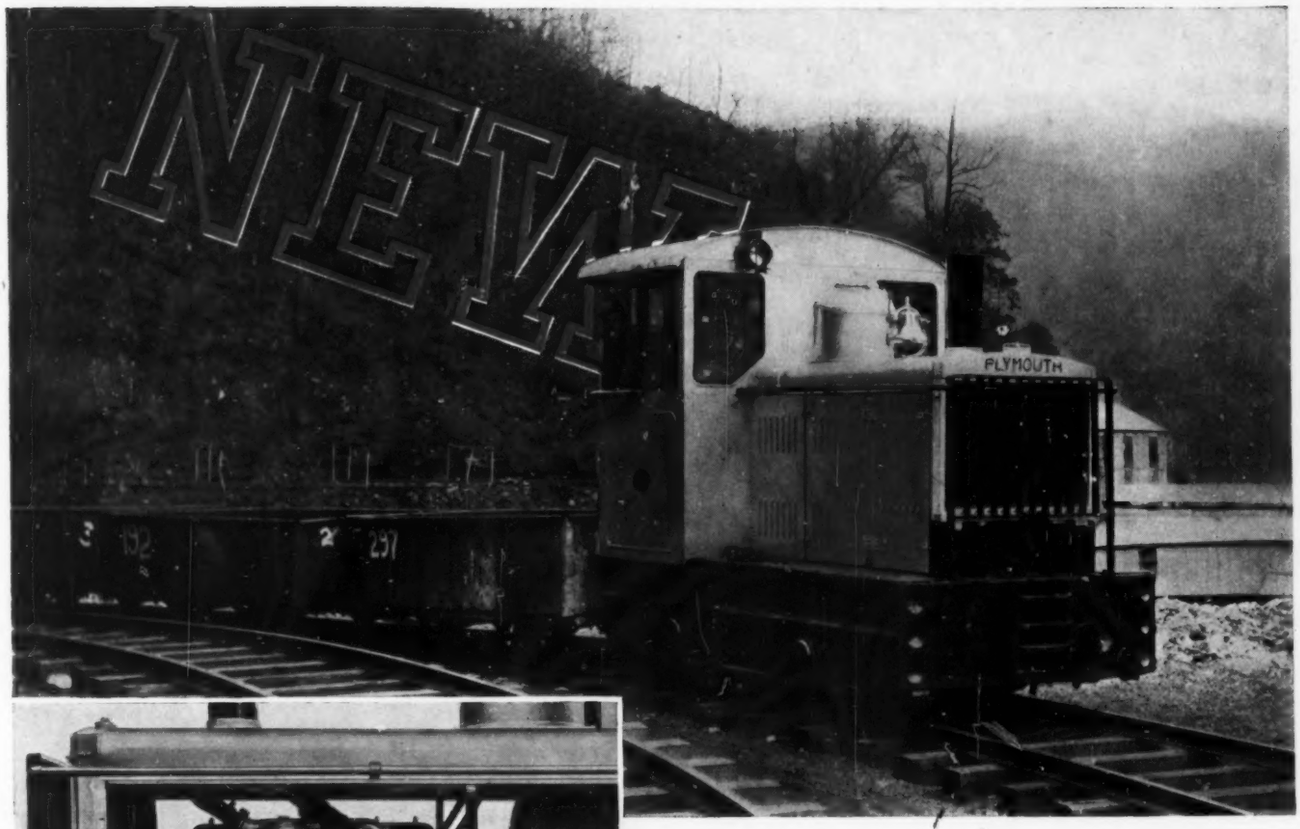
18 popular sizes including portables.

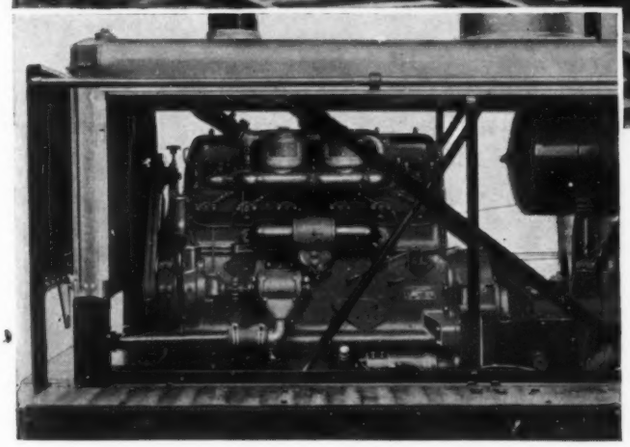
Let us assist in solving your grinding and crushing problems most economically.

Williams Patent Crusher & Pulverizer Co.
800 St. Louis Avenue, St. Louis, Mo.
Sales agencies in all principal cities.

THE WILLIAMS PATENT CRUSHER & PULVERIZER CO. ST. LOUIS MO. U.S.A. TRADE MARK REG. U.S. PAT. OFF.

Williams
OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD
WILLIAMS
PATENT CRUSHERS GRINDERS SHREDDERS





Powerful heart of the husky new Plymouth Diesel

● This new Plymouth 12-ton Diesel direct drive locomotive with the famous Plymouth heavy-duty transmission is licking a tough mile-long material haul at the Carbon, West Virginia, works of the Carbon Fuel Company. » » » »

PLYMOUTH DIESEL

Again PLYMOUTH LEADS

In keeping with the well-known Plymouth policy of making available to locomotive users a wide choice of modern power plants in all sizes of locomotives, we announce . . .

The PLYMOUTH [12-TON] DIESEL LOCOMOTIVE

- Thoroughly proven
- Rugged
- Economical
- Moderately priced
- Standard Construction

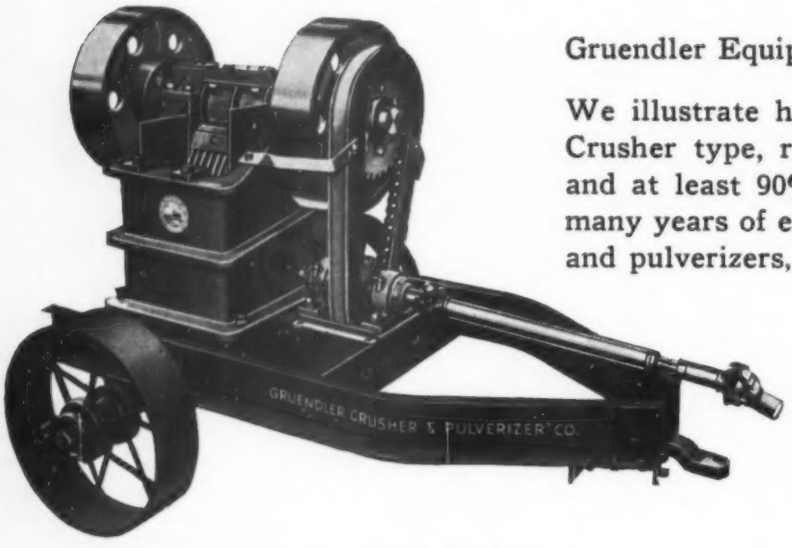
TRACK HAULAGE IS CHEAPER HAULAGE WITH A PLYMOUTH . . . GET DETAILS

PLYMOUTH LOCOMOTIVE WORKS

Division of THE FATE-ROOT-HEATH COMPANY · · PLYMOUTH, OHIO

ROCK AND GRAVEL CRUSHING AND SC
SEMI-STATIONARY AND PORTABLE BY G

FIFTY years manufacturing equipment for the construction field has proven Gruendler equipment sturdily built and handles the job, brings repeat orders.

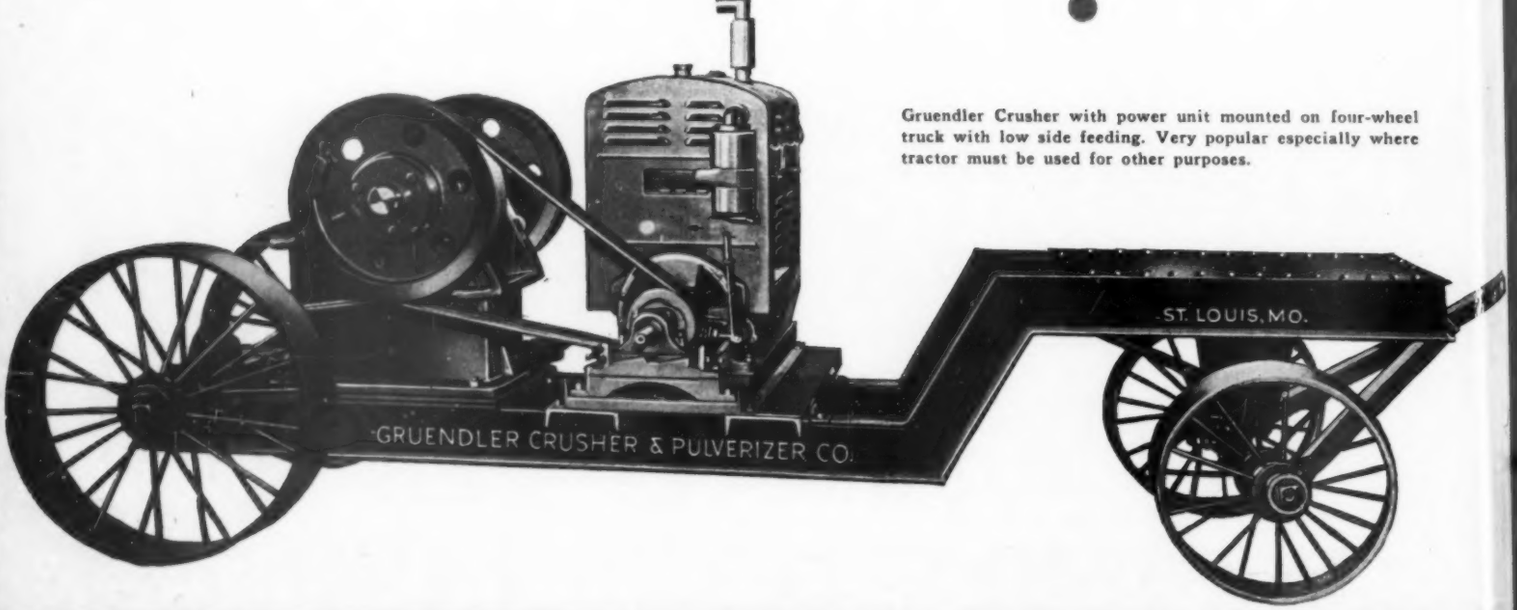


Gruendler Trailer type crusher for attaching behind tractor with universal shaft directly coupled with the power take-off, produces road material economically and now universally used for maintenance work.

Gruendler Equipment furnished to your specifications.

We illustrate herewith three portable units of the Jaw Crusher type, roller-bearing equipped, which saves fuel and at least 90% in lubrication, and due to Gruendler's many years of experience building roller-bearing crushers and pulverizers, they are the most advanced and modern in crushers today.

Many quarry and pit owners, and contractors are now users of Gruendler portable equipment, because they are usually movable for large capacity and produce the necessary aggregate right on the project.



Gruendler Crusher with power unit mounted on four-wheel truck with low side feeding. Very popular especially where tractor must be used for other purposes.

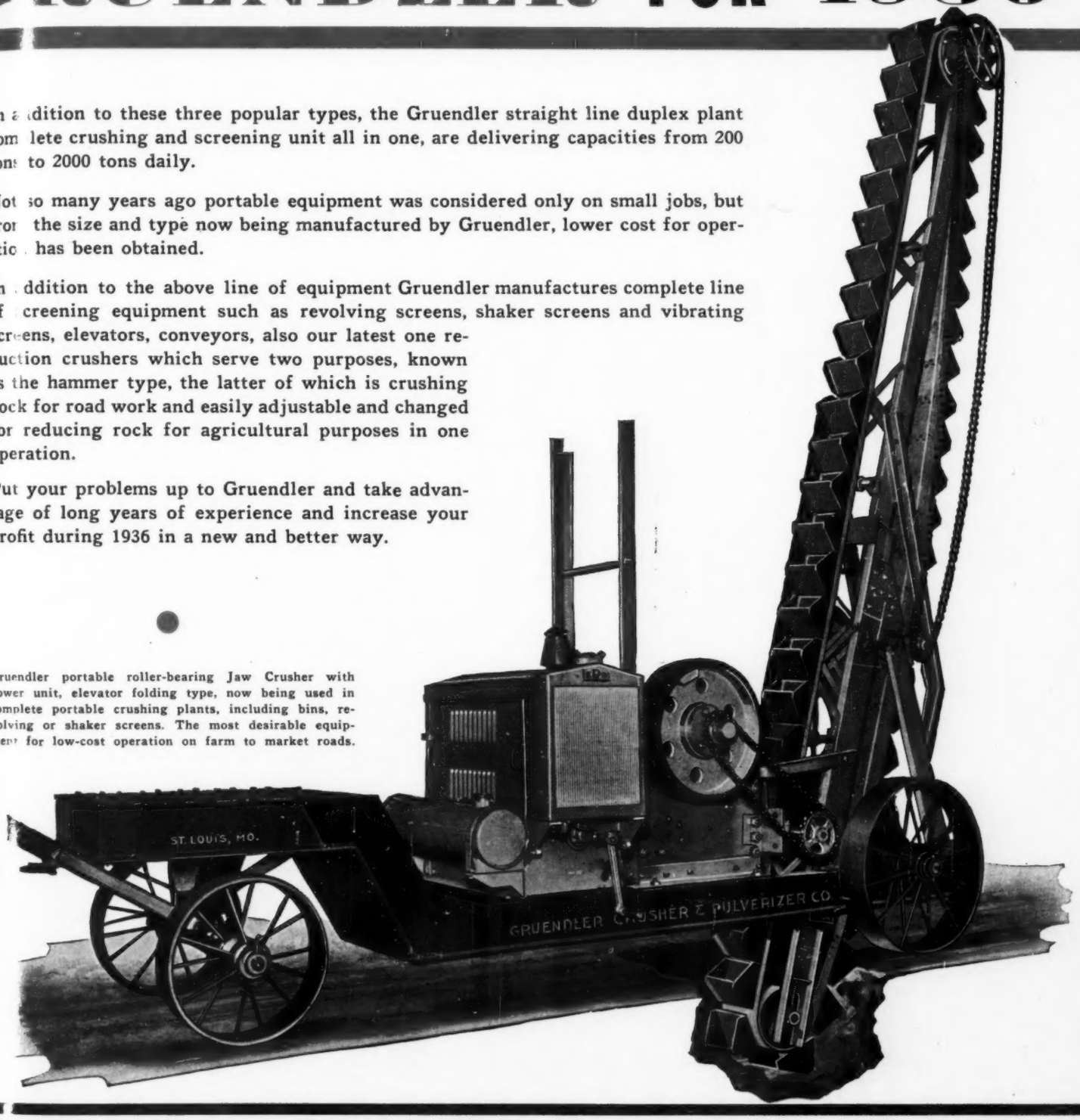
SCREENING EQUIPMENT, STATIONARY
GRUENDLER FOR 1936

In addition to these three popular types, the Gruendler straight line duplex plant complete crushing and screening unit all in one, are delivering capacities from 200 tons to 2000 tons daily.

Not so many years ago portable equipment was considered only on small jobs, but from the size and type now being manufactured by Gruendler, lower cost for operation has been obtained.

In addition to the above line of equipment Gruendler manufactures complete line of screening equipment such as revolving screens, shaker screens and vibrating screens, elevators, conveyors, also our latest one reduction crushers which serve two purposes, known as the hammer type, the latter of which is crushing rock for road work and easily adjustable and changed for reducing rock for agricultural purposes in one operation.

Put your problems up to Gruendler and take advantage of long years of experience and increase your profit during 1936 in a new and better way.



Gruendler portable roller-bearing Jaw Crusher with power unit, elevator folding type, now being used in complete portable crushing plants, including bins, revolving or shaker screens. The most desirable equipment for low-cost operation on farm to market roads.

GRUENDLER CRUSHER & PULVERIZER CO.
RF 2915 N. MARKET ST. — — — — — — ST. LOUIS, MO.

LE TOURNEAU 12-Yard CARRYALLS rolling in tandem behind a 75-H.P. tractor

Use LE TOURNEAU EQUIPMENT

for Faster and Cheaper Moving of Materials

LE TOURNEAU BULLDOZER working in an open coal pit in southern Illinois

LE TOURNEAU CRANE with 30-foot boom placing timbers for a ramp which is to be used for loading LE TOURNEAU BUGGIES by means of a CARRYALL SCRAPER

CARRYALL SCRAPERS for stripping, hauling, dumping, cut and fill work. The **LE TOURNEAU CARRYALL** moves big loads with ease because it rolls on heavy-duty roller bearings and large pneumatic tires. Made in 12, 8 and 6-yard sizes for use with 40 to 90 HP tractors.

BULLDOZERS and **ANGLEDOZERS** with correctly-curved bowl, built to dig, making down pressure unnecessary; with fast, high, powerful lift and low drop; of light, yet stout and rigid construction; made for all size tractors, from 30 HP up. **ANGLEDOZERS** with simple angling adjustment—rigid in all positions.

Tractor **CRANES** in three-boom lengths—20, 30 and 40-foot—for loading and unloading equipment and materials; placing machinery; moving trackage; lifting heavy parts when making repairs and a multitude of other tasks. Made for use with tractors from 20 to 95 HP. Can be quickly coupled or uncoupled from tractor, making the latter available for other uses.

All **LE TOURNEAU** equipment is operated by cable control from a **POWER CONTROL UNIT** mounted at the rear of the tractor. This control is trigger-quick, positive and accurate in action. Weather does not affect its efficiency.

Write, describing your material-handling problems, and our Engineering Department will gladly tell you what **LE TOURNEAU** equipment can do for you.

R. G. LE TOURNEAU, Inc.

PEORIA, ILLINOIS STOCKTON, CALIFORNIA

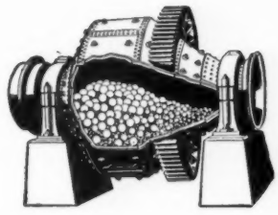
Cable Address: "Bobletorno"

Manufacturers of: ANGLEDOZERS, BULLDOZERS, BUGGIES, CARRYALL SCRAPERS, CRANES, ROOTERS, SHEEP'S FOOT ROLLERS, POWER CONTROL UNITS.

LE TOURNEAU

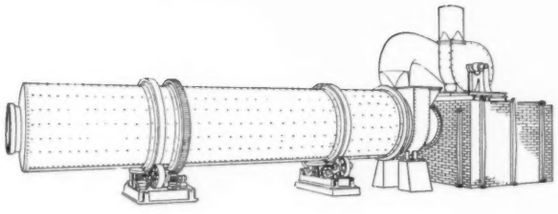
HARDINGE

Pulverizing and Grinding Mills



The Hardinge Conical Mill is the most widely used and most universal of all pulverizers. For wet grinding or dry grinding, to secure a granular product, or extremely fine product, this mill has the lowest maintenance record of any type of pulverizer in commercial use—bar none.—Bulletin 13-C.

Ruggles-Coles Dryers

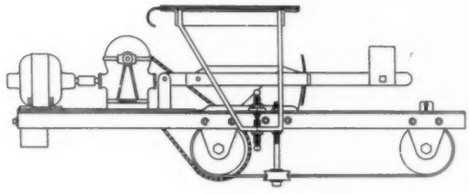


Double shell types for products requiring close control of heat and low fuel consumption.

Single shell types where first cost is more important than the ultimate in efficiency.

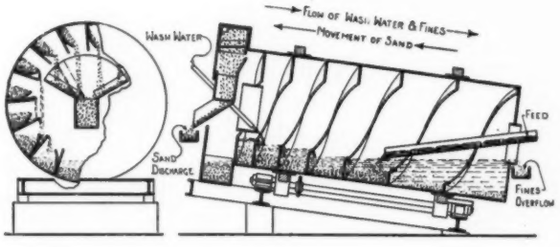
More Ruggles-Coles Dryers are used than Dryers of any other make.—Bulletin 16-B.

Constant Weight Feeders



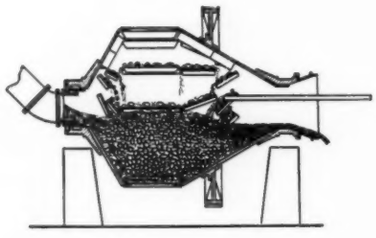
The only feeder that actually increases process capacity 5% to 15% by controlling the flow at a constant weight (not volume). A truly revolutionary piece of equipment—simple and low in cost. It also records the weight fed.—Bulletin 33-C.

Washers—Classifiers



For washing, separating, cleaning, desilting, classifying. No moving parts except the slowly revolving drum. Contamination eliminated and separating efficiency far beyond the ordinary. Capacities range from laboratory size to anything you want.—Bulletin 39.

Scrubbers

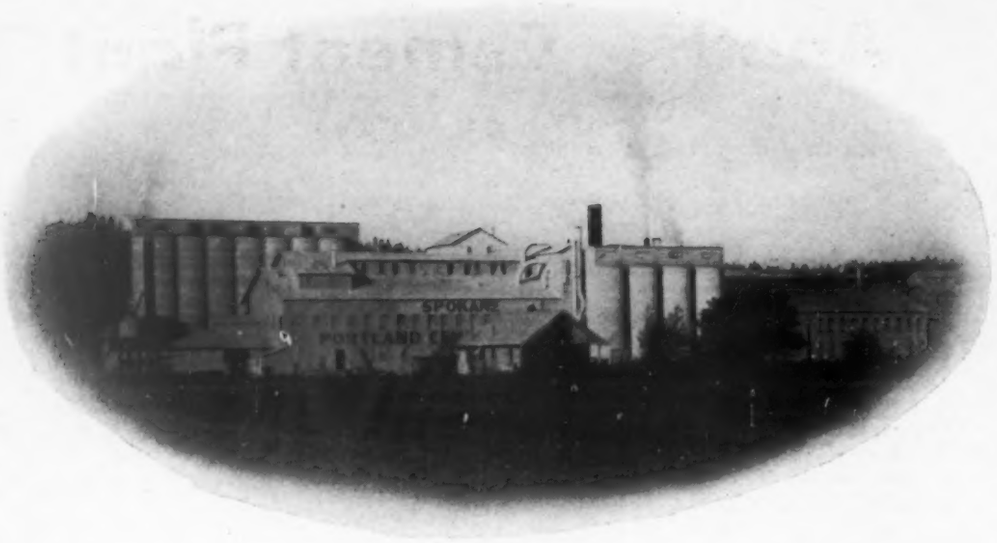


The only scrubber for stone, gravel, sand that scrubs by mass action. No internal moving parts. Water requirement is one quarter that ordinarily needed. Particularly suitable for that tough job where clay balls are present.—Bulletin No. 37.

See our exhibit at the Sand and Gravel Convention, St. Louis, in January

HARDINGE COMPANY
INCORPORATED

York, Pa.—Main Office & Works
New York—122 E. 42nd St.
Chicago—205 W. Wacker Drive
San Francisco—444 Market St.



SPOKANE PORTLAND CEMENT CO. MODERNIZES ITS 22-YEAR OLD PLANT WITH *POLYSIUS EQUIPMENT*. . 1935

(Lepol Kiln, Cera Pumps, Air Floating System)

Lepol Kiln for dry process. *Slurry Dryer* for wet process.

Solo Kilns with integral clinker cooling, for wet and dry process.

Air Swept Mills for simultaneous drying, grinding and separating.

Improved *Solo Mills* for clinker grinding, and wet and dry raw material grinding.

Polydor Air Separators for any type of installation.

Pressor Pumps for handling slurry.

Cera Pumps for Pneumatic Handling and Mixing of dry raw materials and cement.

Air-floating systems for dry ground materials.

Pneumatic Dry-Blending of Raw Materials or Cement to any desired analysis.

Pneumatic Slurry Mixing systems.

Any Existing Cement Plant, Wet or Dry Process, can Utilize to Advantage their Present Machinery for Modernization with Polysius Equipment.

POLYSIUS CORP.
BETHLEHEM TRUST BLDG.
BETHLEHEM, PA.
(UNITED STATES AND CANADA)

POLYSIUS

G. POLYSIUS, A.G.
DESSAU, GERMANY
(ALL COUNTRIES EXCEPT UNITED STATES AND CANADA)

Another Cement Plant
RELIES ON
CONDOR CONVEYOR BELT

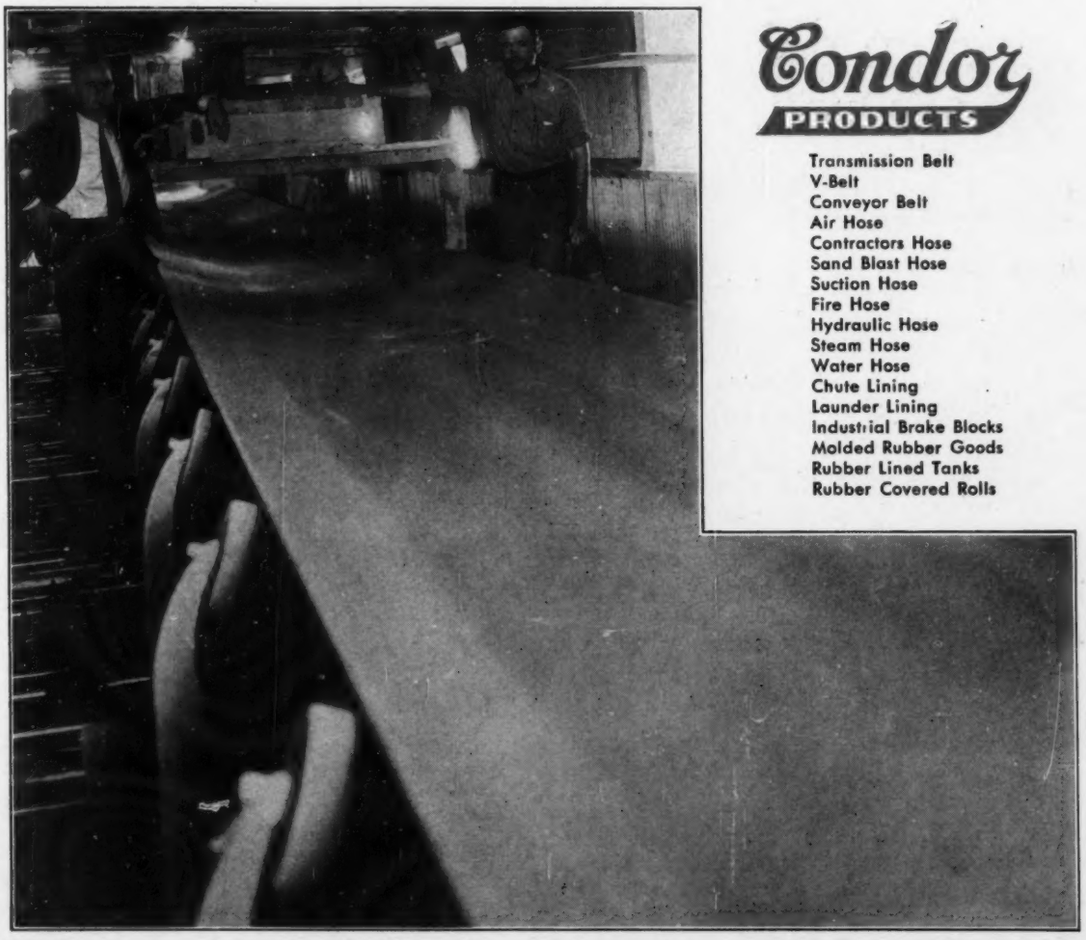
Sold on Performance

Like many other cement plants whose severe use of conveyor belting is a rigid test, the one shown below has demonstrated the "extra value" in the new "Homo-Flex" construction of Condor Conveyor Belt. Unusual efficiency, long life and low ultimate cost are the results of the entirely new engineering principles incorporated in this "Homo-Flex" construction—different from that of any other belt. The component parts of the belt are combined into a homogeneous unit, tying covers and fabric into one mass, making possible outstanding performance records on long and short hauls, high or low lifts, and with heavy, light, dry or wet materials . . . Note the specific advantages of "Homo-Flex" construction (left), then test out Condor Conveyor Belt on your hardest type of conveyor service—hot coke and cement, clinkers, rock, ore, mixed concrete, etc. A trial will convince you that it is a real high tonnage—low-cost combination.

Write for New General Catalog

ADVANTAGES OF "HOMO-FLEX" CONSTRUCTION

1. Extreme flexibility—troughs naturally even in thick ply and long narrow belts.
2. Reduces stretch to a new minimum.
3. Gives longer belt life due to complete bonding of every member in the belt into a homogeneous structure.
4. Ply separation is eliminated.
5. Inseparable wear-resisting covers.
6. Resists puncture to a high degree.



Condor Conveyor Belt—48" 7 ply Heavy-Duty type—for handling hot slag in a large cement plant.

Condor PRODUCTS

Transmission Belt
V-Belt
Conveyor Belt
Air Hose
Contractors Hose
Sand Blast Hose
Suction Hose
Fire Hose
Hydraulic Hose
Steam Hose
Water Hose
Chute Lining
Launder Lining
Industrial Brake Blocks
Molded Rubber Goods
Rubber Lined Tanks
Rubber Covered Rolls

THE MANHATTAN RUBBER MFG. DIVISION
OF RAYBESTOS-MANHATTAN, INC.

EXECUTIVE OFFICES and FACTORIES, 13 TOWNSEND STREET, PASSAIC, N. J.

He TIMED *his* FUSE *for* 100 YEARS

A century has passed since Wm. Bickford discovered that a simple twist of jute yarn could be made to hold a core of gun powder in a continuous, slow-burning train.

In this discovery he bridged a hundred years—perhaps an age, for during the century that has witnessed the greatest progress the world has ever known, this basic principle has remained unchanged.

Bickford Safety Fuse came to America in 1836. At first a crude, handmade product, its development throughout the years has been evidenced by closer standards, better materials, finer construction. Steady improvement rather than radical change bears witness to able thinking, careful planning one hundred years ago.

In 1936 we celebrate our Centennial—and dedicate ourselves to maintain these high standards, that Ensign-Bickford Safety Fuse may ever be dependable.

A product, like a person, is known by the company it keeps. During this year we shall show you the use of Ensign-Bickford Safety Fuse and Cordeau-Bickford Detonating Fuse by famous companies.

ENSIGN-BICKFORD
Safety Fuse

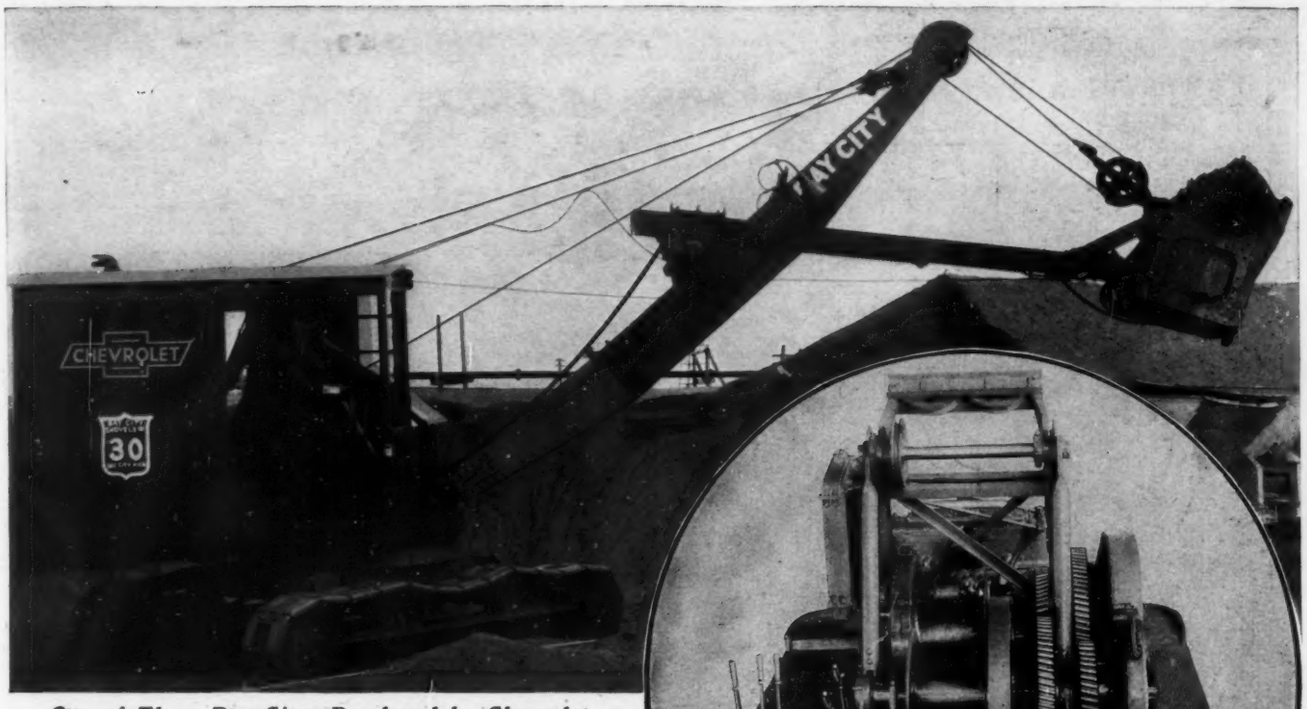
CORDEAU-BICKFORD
Detonating Fuse

Simsbury, Connecticut, U. S. A.

SF-50

THE ENSIGN-BICKFORD COMPANY

Winchell Library of Geology



One of Three Bay Citys Purchased by Chevrolet Grey Iron Foundry

Convertible Bay City equipment, with standardized design, incorporates the best construction features, eliminating surplus dead weight, thus adding to productive yardage and effecting lower costs.

Sturdy, tough and dependable, yet never extreme, Bay City design offers economy of operation and upkeep. Note for instance, the machinery assembly illustrated at the right. Tandem drums with more cable surface permits straight cable lead from drums with any boom or bucket, thus avoiding undue cable wear without off-center pull. Helical cut alloy steel gears insure quiet, smooth operation and longer life. This efficient machinery arrangement and design is standard on all Bay City full-revolving models.

Before you buy your next shovel, compare Bay City construction materials, design, accessibility, speed, working ranges and safe load capacity with any machine in the same capacity or weight class. You can't beat Bay City value regardless of what you pay.

At The ROAD SHOW

Cleveland—Jan. 20-24

See the NEW BAY CITY

⅜ Yd. Full Revolving

A 10-ton machine that can really "take it." All modern features of design, and unit castings. Strength and sturdiness not sacrificed for light weight or price.

First Public Showing

— Also —

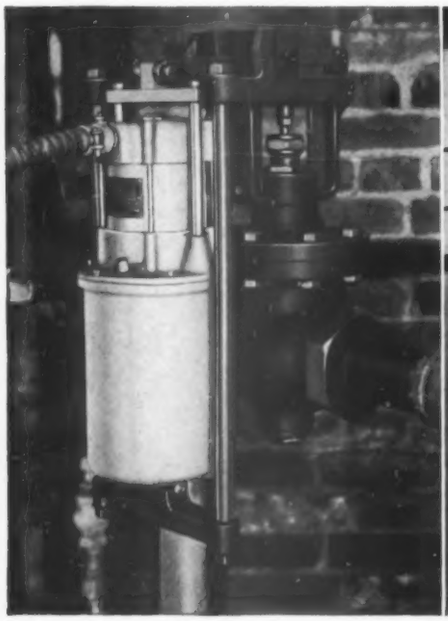
Model 62—One Yard Diesel Shovel

25 Reasons for Choosing a BAY CITY

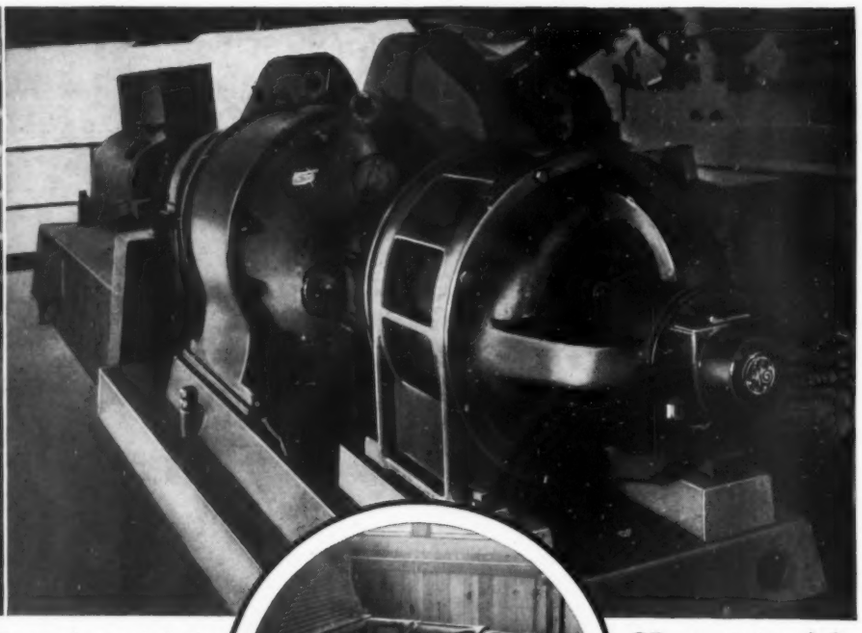
1—Convenient economical weight.
2—Helical cut gears—noiseless, long wearing.
3—Unit (nickel-manganese) car body and machinery table, totally heat treated.
4—Frictionless bearings thruout.
5—6 cylinder power.
6—Extra large diameter swing roller-path.
7—Oversized clutches and brakes.
8—Drop forged crawler shoes.
9—Long crawlers—low bearing pressure.
10—Chain crowd with automatic adjustment.
11—Swing lock—in any cab position.
12—Automatic Travel lock.
13—Extra heavy cab. Plenty inside working room.
14—Fast operating speeds.
15—Two travel speeds.
16—All steel construction.
17—Three lever control.
18—E-Z clutch control.
19—High pressure lubrication thruout.
20—Safety worm boom hoist.
21—Separate hoist drums.
22—Internal swing teeth.
23—Unequalled steering at full speed.
24—Convertible—without machinery change.
25—Accessibility for inspection or adjustment.
10 Models—⅜ to 1¼ yd.

BAY CITY SHOVELS Inc. (Eastern Offices, Roselle, N. J.) **BAY CITY, MICH.**

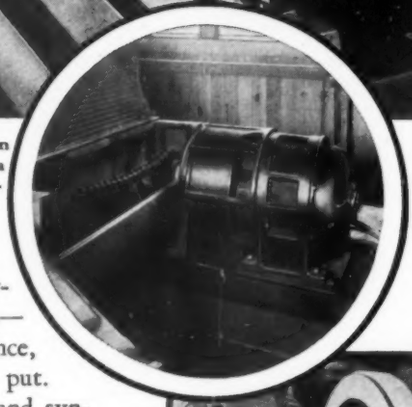
FROM QUARRY TO CONSTRUCTION JOB YOU CAN PROFIT WITH G-E EQUIPMENT



G-E Thrustors give efficient service in opening and closing valves, doors, and gates, and in operating levers. The one shown is serving as a valve operator in a rock-products plant



G-E wound-rotor induction motor driving a kiln — a smooth-operating, economical, long-lived power unit



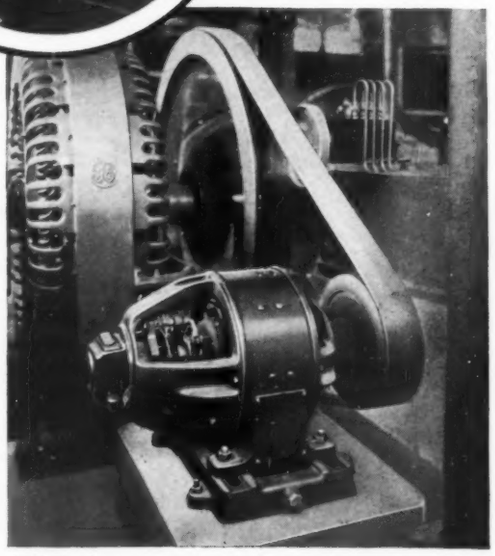
G-E gear-motor of the single-reduction type driving a cold Amesite mixer. A low-cost power unit, adapted to many purposes

DO you need new drive units? General Electric can furnish them in all standard and in many special types—units that offer low-cost operation, negligible maintenance, and efficient adaptability to whatever use they may be put. Squirrel-cage and wound-rotor induction motors, d-c. and synchronous motors—all are designed to help you cut plant operating costs. These motors are available not only in open types, but also in splashproof and totally enclosed, dust-tight construction.

Your control equipment—do you feel that it is obsolete or inefficient? General Electric offers a complete line of protected control which can aid you in solving your problem. Automatic devices, cable, switchgear, also control equipment of a special nature if needed, can be supplied in this line.

Other electric requirements — generators for steam, hydroelectric, or Diesel-electric prime movers; transformers; power and instrument Selsyns; Thrustors; power-factor-corrective equipment; and plant-lighting apparatus are all available in efficient, long-lived units that return substantial savings by their low operating cost, low maintenance, and easy adaptability.

For information concerning General Electric's complete line of electric equipment for the rock-products industry, write to the G-E sales office nearest you, or to General Electric Company, Schenectady, New York.

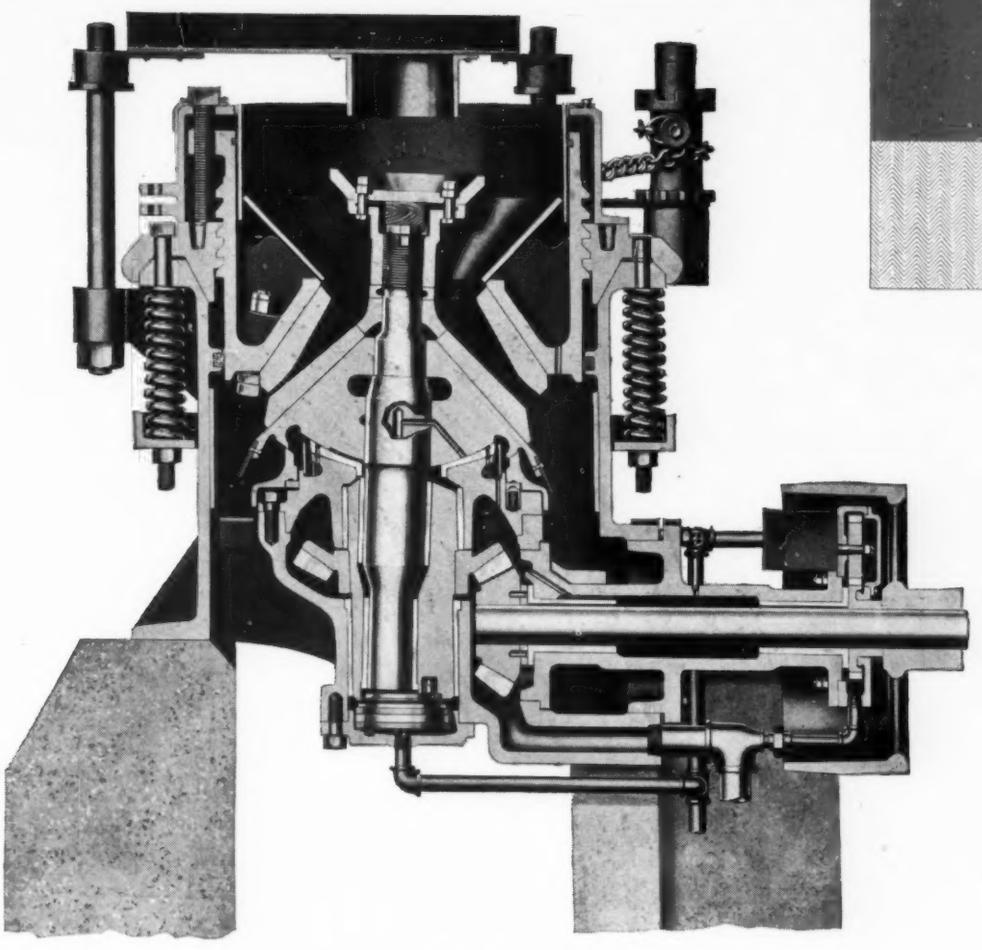


G-E synchronous motor driving an air compressor in a cement mill. This drive is highly efficient. It effects substantial yearly savings in power costs

GENERAL ELECTRIC

011-69

NOW AVAILABLE *in a* SMALLER SIZE



The New 20 INCH CONE

Has all the features of the larger cones

Perhaps you are one of those producers who has always wanted a crusher with the advantages of the Symons Cone, but your operations were too small for the sizes in which they were built. It was to meet this demand that we brought out this smaller crusher, one that gives to small and medium sized plants all the advantages afforded by Symons Cone Crushers.

Write for descriptive folder, or let us tell you about it at the St. Louis Convention.

NORDBERG MFG. CO., MILWAUKEE, WIS.

NEW YORK CITY	LOS ANGELES, CAL.	LONDON, ENG.	TORONTO, CANADA	MEXICO CITY, MEX.
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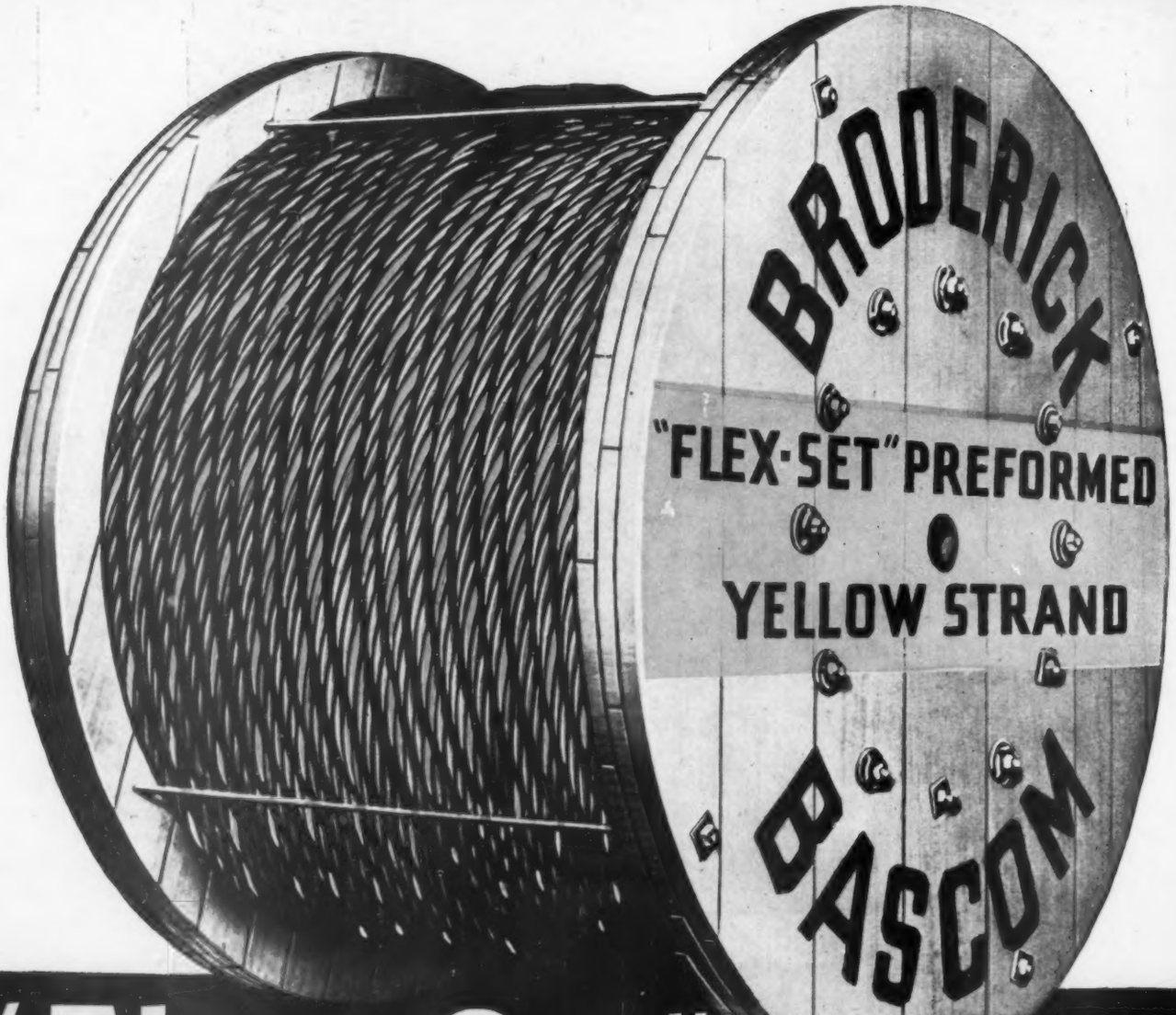
SYMONS CONE CRUSHER

Our Engineers Must Say It's



"Flex-Set" Preformed

"OK"

As soon as the wire comes into the factory, our Engineers step in and make it *prove* that it is good enough for "Flex-Set" Preformed Yellow Strand. Then, and then only, does it ever receive their "O. K."

Strict supervision follows every process of manufacture; and just before wires and strands become rope, preforming shapes the strands into the helical form they occupy permanently.

Thus "Flex-Set" Preformed Yellow Strand is practically pre-broken in. It is limp and tractable. Handles easily. Runs smoothly. Resists kinking and fatigue. Lasts much longer than ordinary construction rope on most installations.

Let us tell you if "Flex-Set" Preformed Yellow Strand is the rope for your use.

BRODERICK & BASCOM ROPE CO., St. Louis

Factories: St. Louis and Seattle . . . . . Branches: New York, Seattle, Portland, Houston

T-25

Yellow Strand

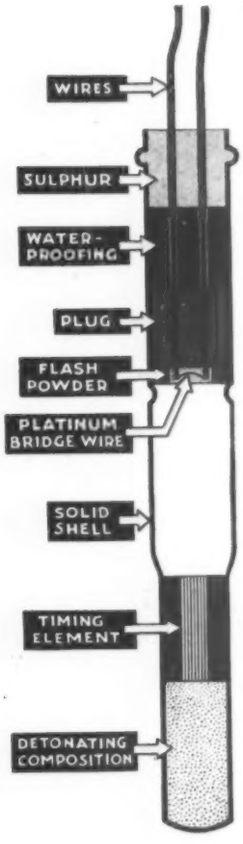
HERCULES' U. S. Patent No. 1,999,820 ★

means that something has happened

in "DELAYS"

NO VENT

HERCULES ALL-METAL DELAY
ELECTRIC BLASTING CAP



Just one look at a Hercules "No Vent" will tell you that something important has happened to "delays." **There isn't a vent or opening of any kind in the single, one-piece, all-metal shell.**

This revolutionary construction has been made possible by the startling discovery of a timing element that does not produce any gas.

Because the patented timing element does not produce gases of any kind, this "delay" does not need gas-release vents that might let water in and cause misfires. Because there are no hot gases, "No Vents" cannot burn the explosives charges. **Even black powder charges can be fired in rotation** — the first time this has been possible with a delay electric blasting cap.

These are only a few reasons why Patent 1,999,820, issued to Hercules Powder Company, is important to you. For more reasons, ask any of the thousands of satisfied users of "No Vents."

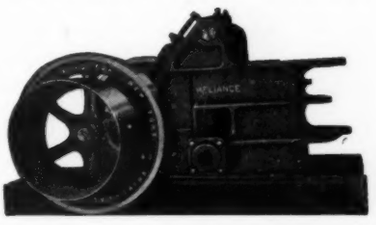
★ Ordinarily, no one pays attention to patents, but this Hercules patent is important to every user of explosives, not only because it covers a revolutionary new delay electric blasting cap, but because it is significant of what Hercules is doing for better blasting.

J-3

HERCULES POWDER COMPANY
INCORPORATED
946 KING STREET, WILMINGTON, DELAWARE

THE NEW MODEL "34" offers 25 to 40% increased capacity—anti-friction bearings—better gradation of product and 25 to 30% greater recovery of fines.

RELIANCE ALL-STEEL CRUSHER



The one crusher that can "take it." The first Reliance All-Steel Crusher built more than 20 years ago—is still earning profits. That's the kind of service correct design — wear-resisting material and rugged construction results in. Ask for full details.

GAYCO RELIANCE

Increases capacity of all types of grinding mills and will separate all dry fine material.

By a simple adjustment the fineness of product may be changed from 50 to 400 mesh. Once adjusted—it is not affected by variation of speed or rate of feed.

GAYCO CENTRIFUGAL AIR SEPARATORS increase production and profits while assuring an absolutely uniform product of any desired fineness. Rugged, reliable and capable of withstanding the most severe service, many of these machines have been operating continuously 24 hours per day for years without one cent of cost for repairs.

If you have any special problem, send us sample for free test.

Universal Road Machinery Co.

RUBERT M. GAY - DIVISION

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"GAYCO" CENTRIFUGAL SEPARATORS

"RELIANCE" CRUSHING, SCREENING AND WASHING EQUIPMENT

USE IT–

to lower your Screening Costs!

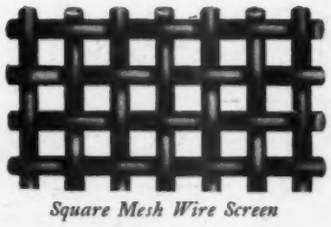
Wire is the very "backbone" of any wire screen. In other words, a screen is just as good as...no better than ...the wire of which it is made.

To help you solve your screening problems... to help you lower your screening costs... Roebling offers you the benefit of 90 years of wire making experience.

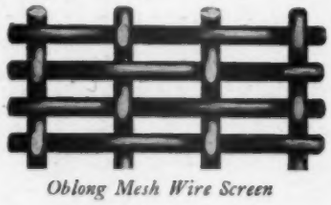
Let us cooperate with you. Our screens are available for sizing, cleaning, and grading purposes... in many types and metals to meet a wide range of efficiency, vibration, and abrasion requirements.

We would be very glad to receive your request for further data, prices, samples... or a copy of our new Wire Screen Catalog.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON, N. J. *Branches in Principal Cities*



Square Mesh Wire Screen



Oblong Mesh Wire Screen

ROEBLING *Wire Screen*

TRADE JERSEY MARK

ROEBLING — MAKERS OF WOVEN WIRE FABRICS FOR OVER HALF A CENTURY

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SHOVELS · DRAGLINES · CRANES

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SKYLINE DRIVE · CASPER ALCOVA PROJECT · PINE VIEW DAM · THE LEVEE · HETCH HETCHY PROJECT · MUSKINGUM VALLEY · METROPOLITAN AQUEDUCT · QUIBBIN RESERVOIR DIKE · BONNEVILLE DAM · FORT PECK DAM · GRAND COULEE DAM · SAN FRANCISCO-OAKLAND BAY BRIDGE

See Our Exhibit Booth A-6

Cleveland Road Show JAN. 20-24

We cordially invite you to make our booth your headquarters while attending the Cleveland Road Show. There you will find the excavators that are setting the pace for shovel, dragline and crane design.

Comparisons prove that it is more economical to handle your excavating with LIMA shovels, draglines and cranes.

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BOOTH No. 44
JOINT EXPOSITION
ST. LOUIS, MO., JANUARY 27-30

LIMAS ARE BUILT IN CAPACITIES FROM 3/4 TO 3 YARDS

DUST CONTROL... *Suppression*

...Collection...Disposal

BE YOUR DUST PROBLEM SMALL OR LARGE, IF IT INVOLVES TEMPERATURE CONSIDERATIONS OR REQUIRES *Wet* or *Dry* TREATMENT

Consult **BLAW-KNOX**

for a prompt economical solution

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BLAW-KNOX COMPANY

2035 FARMERS BANK BUILDING PITTSBURGH, PA.

Offices in Principal Cities

How RAYMOND CHANGES THE PULVERIZING PICTURE YEAR AFTER YEAR

REVIEW industrial history for the past half-century, and you will find that the major developments in pulverizing and separating machinery were pioneered and put into practical application by Raymond engineers.

Air Separation was as revolutionary an advance in 1887, as Flash Drying is today. Just as the first Raymond mills set records for low costs in the early nineties, so today sensational savings are shown by the Raymond BOWL MILL.

For this machine embodies the best in Raymond experience and the latest in modern engineering design. Capable of running months without any shutdowns—adjustable to the fullest degree while operating—elimination of metal-to-metal contact—negligible friction losses—high-grade roller and ball bearings automatically lubricated—all result in new low costs per ton of product.

If the Bowl Mill applies to your problem, you are assured of extraordinary economies. Write for Catalog.

RAYMOND BROS. IMPACT PULVERIZER CO.

Division of Combustion Engineering Co., Inc.
1307 North Branch Street, CHICAGO
Sales Offices in All Principal Cities.
Canadian Representative:
Combustion Engineering Corporation, Ltd.
Montreal

PROFITABLE LOADING

There'll be more yardage for you in 1936 . . . more reason for profitable, up-to-date loading methods. Saving a few cents a yard will mean hundreds of dollars of extra profit.

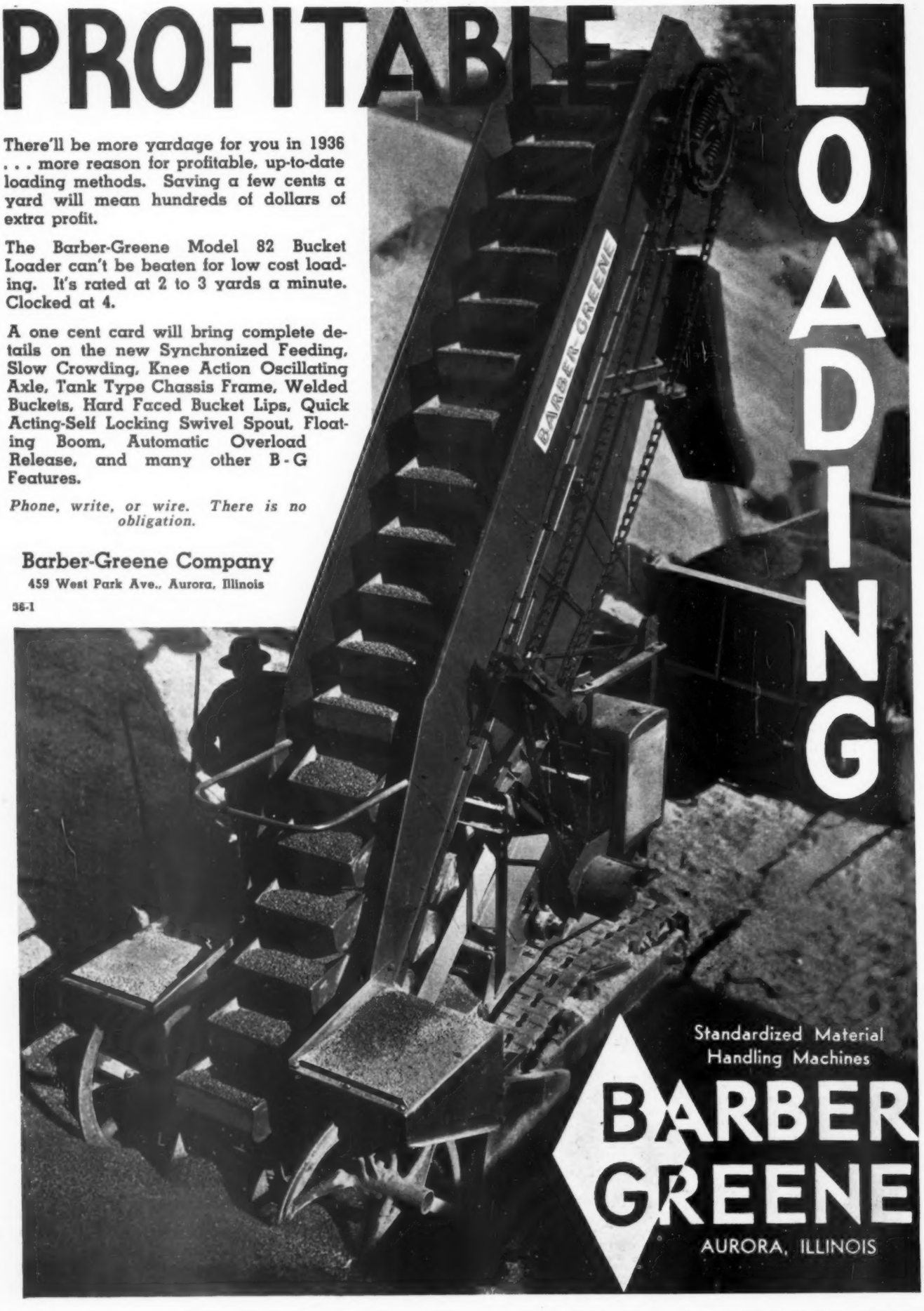
The Barber-Greene Model 82 Bucket Loader can't be beaten for low cost loading. It's rated at 2 to 3 yards a minute. Clocked at 4.

A one cent card will bring complete details on the new Synchronized Feeding, Slow Crowding, Knee Action Oscillating Axle, Tank Type Chassis Frame, Welded Buckets, Hard Faced Bucket Lips, Quick Acting-Self Locking Swivel Spout, Floating Boom, Automatic Overload Release, and many other B-G Features.

Phone, write, or wire. There is no obligation.

Barber-Greene Company
459 West Park Ave., Aurora, Illinois

56-1

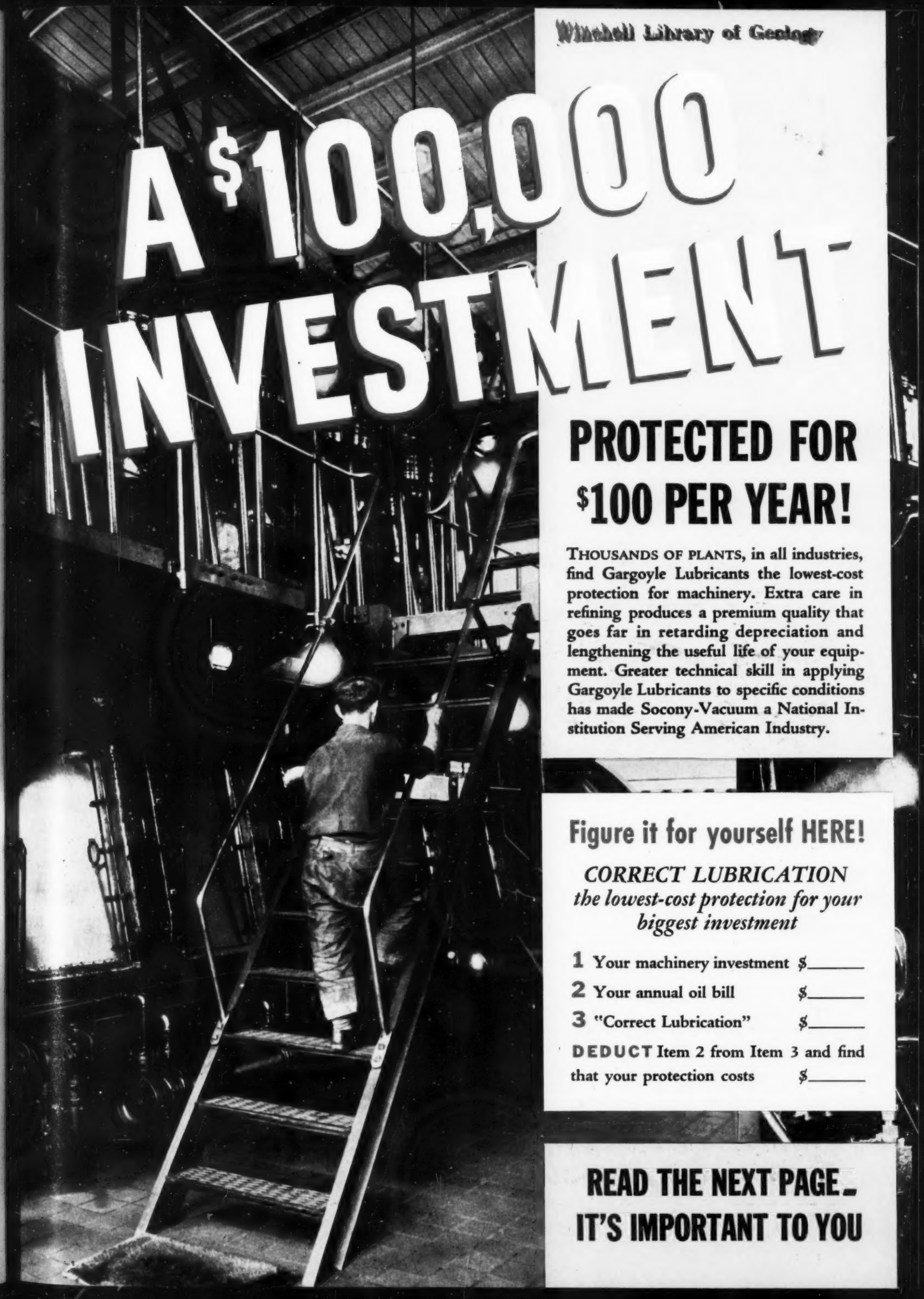


Standardized Material Handling Machines

BARBER GREENE

AURORA, ILLINOIS

Winchell Library of Geology



A $100,000 INVESTMENT

PROTECTED FOR $100 PER YEAR!

THOUSANDS OF PLANTS, in all industries, find Gargoyle Lubricants the lowest-cost protection for machinery. Extra care in refining produces a premium quality that goes far in retarding depreciation and lengthening the useful life of your equipment. Greater technical skill in applying Gargoyle Lubricants to specific conditions has made Socony-Vacuum a National Institution Serving American Industry.

Figure it for yourself HERE!

CORRECT LUBRICATION
the lowest-cost protection for your biggest investment

1 Your machinery investment $_____

2 Your annual oil bill $_____

3 "Correct Lubrication" $_____

DEDUCT Item 2 from Item 3 and find that your protection costs $_____

READ THE NEXT PAGE... IT'S IMPORTANT TO YOU

SCOOPING UP PROFITS!

Profits we figure on are profits we get, say thousands of contractors who standardize on Socony-Vacuum Lubricants

HITTING A FAST PACE and keeping it up is essential in most projects right now. Be guided by the experience acquired on some of the biggest jobs in the country. Gargoyle Lubricants are safeguards to profits you can't afford to ignore, no matter what the nature of the job.

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Lubricants

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Select the Rope that Fits Your Job

Proper selection of Wire Rope is all-important. Every Wire Rope design is planned to resist a given type of destruction. The usual result, however, is loss of resistance to another type of destruction. For instance, few but heavy wires in the strands make a rope that long withstands abrasion but more quickly fails from bending. The rope made of many small wires better resists bending but more quickly falls victim to abrasion. Longest rope service results from the correct compromise of resistance characteristics to meet the destructive forces as they are present in the particular rope use. Let us send you facts to consider when selecting Wire Rope. Write today.

•

WICKWIRE SPENCER STEEL COMPANY, *General Offices:* 41 East 42nd Street, New York. *Sales Offices and Warehouses:* Worcester, New York, Chicago, Buffalo, San Francisco, Los Angeles; *Export Sales Dept.:* New York. WICKWIRE SPENCER SALES CORPORATION, New York, Chattanooga, Tulsa, Portland, Seattle.

WIRE ROPE
by Wickwire Spencer

WICKWIRE SPENCER STEEL CO.
41 East 42nd St., New York City
Please send me reprints of previous advertisements which tell "How to make Wire Rope last longer".

Name_____

Firm_____

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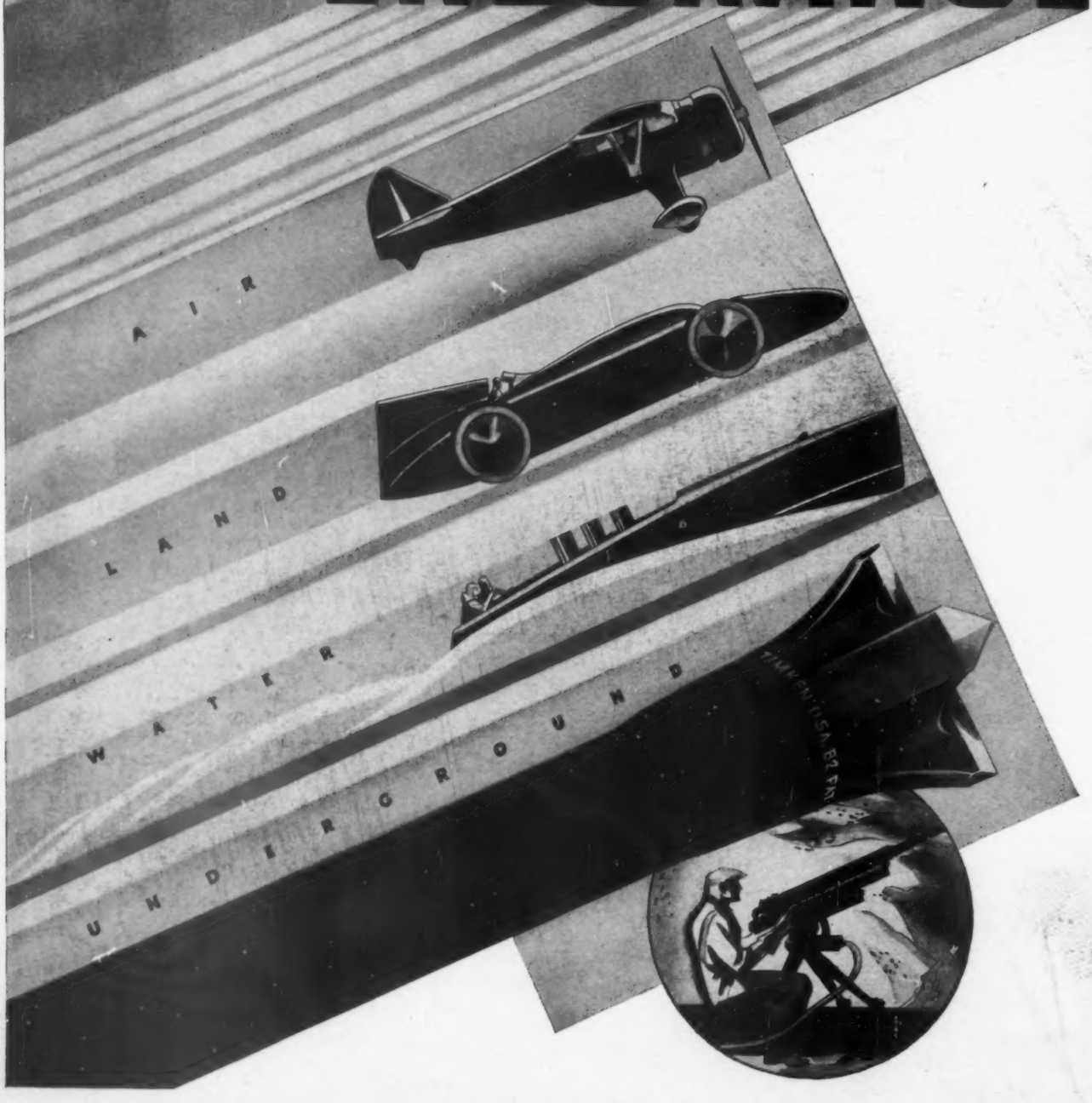
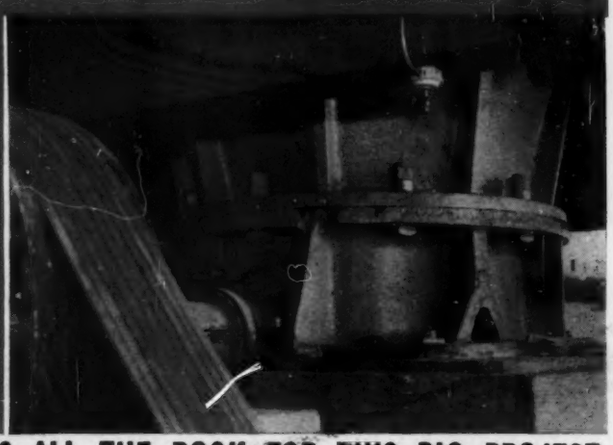
City_____ State_____

SPEED and ENDURANCE



TIMKEN BITS

TELSMITH AT THE GRAND COULEE DAM



A No. 20 TELSMITH PRIMARY BREAKER CRUSHES ALL THE ROCK FOR THIS BIG PROJECT

Why was the Telsmith Primary Breaker selected by the M-W-A-K Co. for the million dollar aggregate plant at the Grand Coulee Dam? Why was the entire responsibility for crushing all oversize from the Brett pit, 20 inch to 6 inch boulders, placed on Telsmith?

Because Telsmith never fails . . . it is *the* outstanding performer on hard rock. It has a fixed shaft and sleeve eccentric. Short and compact, it has a *steel* frame and *steel* crown. Force feed oiling permits higher eccentric speeds and faster gyration. Larger head and concave diameters, with greater receiving and crushing area, allow faster feeding. Telsmith's *parallel pinch* starts immediately . . . stops slippage . . . crushes full tilt all the way down . . . *guarantees bigger capacity.* Investigate Telsmith's guarantee against breakage, even by tramp iron. Write for Bulletin C-11.

BC-1-36

SMITH ENGINEERING WORKS, 504 EAST CAPITOL DRIVE, MILWAUKEE, WIS.

10 Church Street • 201 No. Wells St. • 1013 Commercial Trust Bldg.
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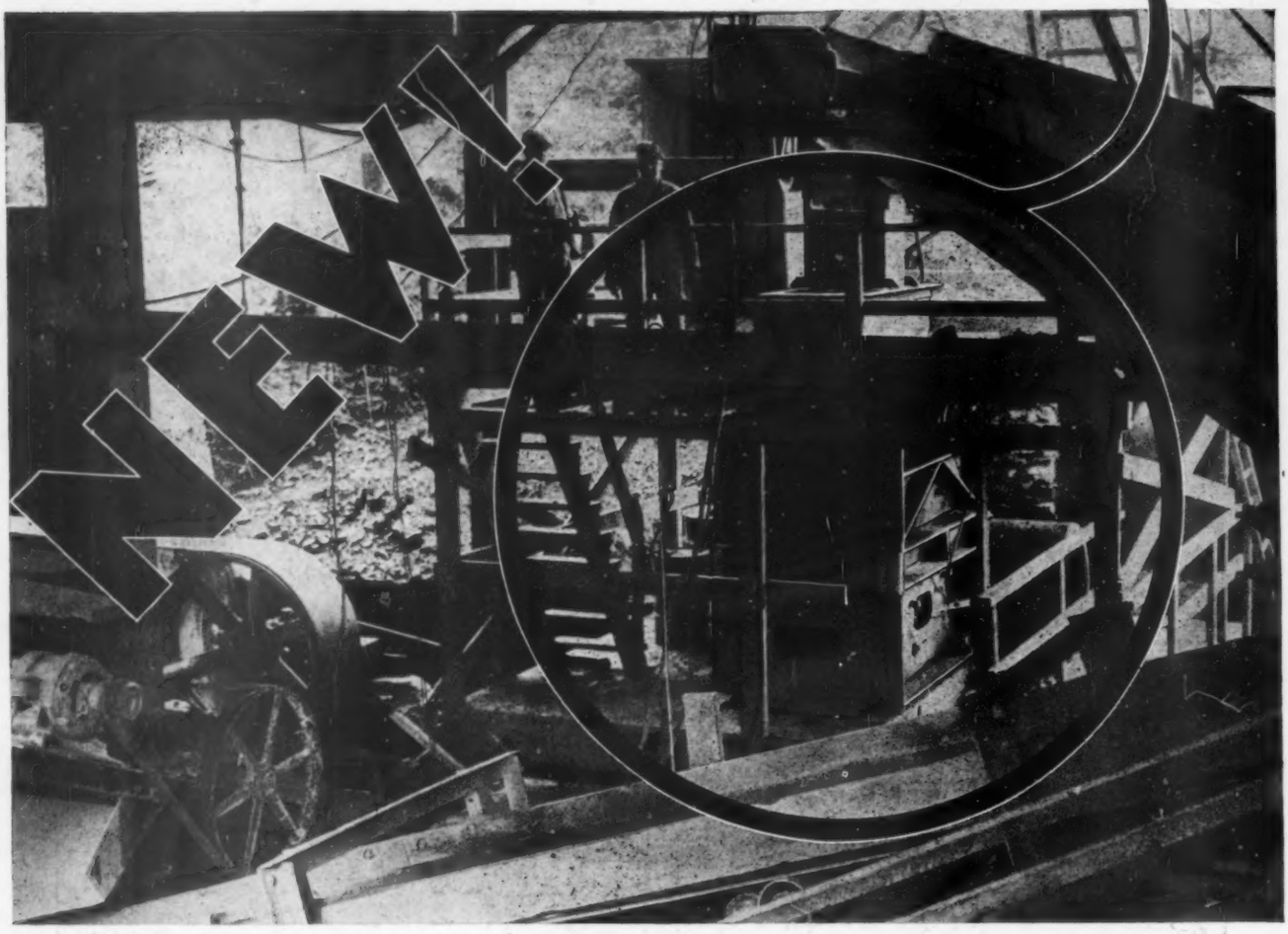
603 Statler Bldg. • 412 Westinghouse Bldg. • Brandeis M. & S. Co.
Boston, Mass. • Pittsburgh, Pa. • Louisville, Ky.
Associates in Canada: Canadian Ingersoll-Rand Co., Ltd.

TELSMITH

A DOUBLE JAW CRUSHER!!

- By BIRDSBORO-BUCHANAN -

PATENTED



For two years the BIRDSBORO-BUCHANAN engineers have been developing and operating an All-Steel Double Jaw Crusher. This machine has been operating in the line, as illustrated, in the plant of one of our large eastern producers, crushing some of the hardest trap rock in the east. This crusher has proven its ability to stand up and take this severe service.

This crusher is the result of a long-recognized need of many stone and gravel producers for a secondary jaw crusher, capable of handling large tonnages, produced by the primary crushers, in the modern plants These Double Jaw Crushers will be built in sizes capable of receiving up to 10" or 12" material and can be set to produce material for all modern specifications, down to ½".

FEATURES

- The usual BIRDSBORO-BUCHANAN rugged all-steel construction.
- Special feed distributor and flared discharge areas, result in unusually large capacities.
- Completely Roller Bearing equipped.
- Automatic spring release safety device.
- Automatic lubrication.
- Modern non-choking type jaw plates.
- Due to the double feed opening, this one machine can be used as a primary and secondary crusher in smaller plants, because both jaws can be set independently to the required setting.

Write us for detailed information and specifications covering these new modern crushers.

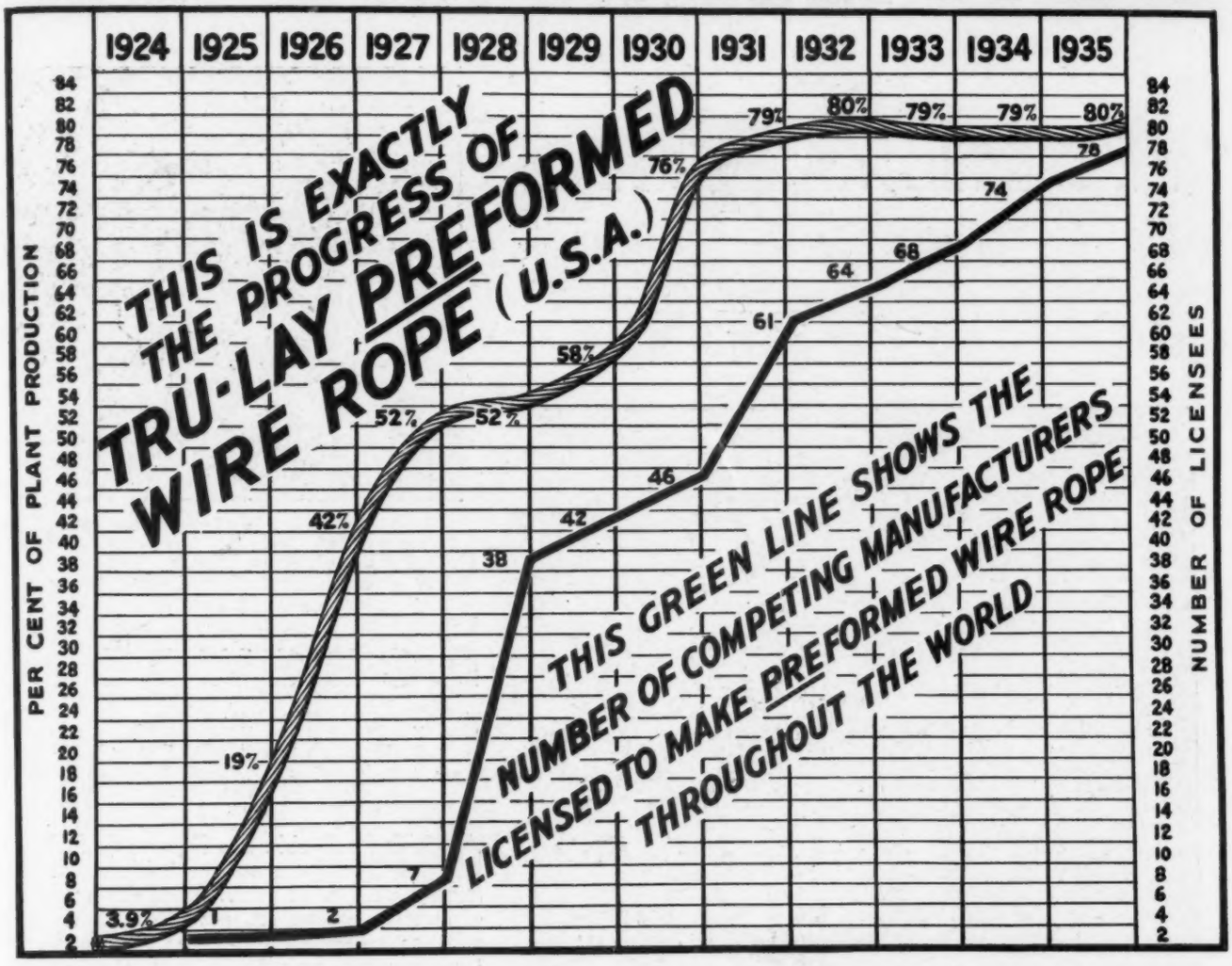
BUCHANAN

C. G. BUCHANAN COMPANY
INCORPORATED
90 WEST STREET
NEW YORK, N. Y.

Subsidiary of—Birdsboro Steel Foundry & Machine Company
Birdsboro, Pennsylvania, U. S. A.

Represented in Canada by—Fraser & Chalmers of Canada, Ltd.,
1411 Crescent St., Montreal, Que. G. E. Sancton, Gen. Mgr.

WE WELCOME 1936



● We started making TRU-LAY Preformed Wire Rope in 1924. It was a better rope than had ever been made before. But we had to meet the competition of fixed buying habits; long established standards for wire rope service; the inborn prejudice against anything radically new.

But TRU-LAY Preformed proved itself such a superior rope that today the manufacturers responsible for over 95% of the wire rope production in the United States are licensees under our exclusive preforming patents. They too, *now,* make and sell preformed wire rope. And *that* is new competition for us. Tougher competition. By licensing them we have admitted our keenest competition to our own exclusive field of action. But we are glad for this new, and tougher, competition. *First:* it is the most convincing acknowledgment of the superiority of preformed wire rope. *Second:* it adds momentum to the swing toward preformed. *Third:* it keeps us on our toes to see that production and service are maintained at the highest standard on our own TRU-LAY Preformed. . . . For—with this new and licensed competition, we've *got* to make TRU-LAY Preformed the best rope of all.

We welcome 1936 . . . the year in which we will prove our "metal" to wire rope users—the quality of our product and the efficiency of our Engineering and Production Departments which the entire industry throughout the world has acknowledged.

AMERICAN CABLE COMPANY, Inc., WILKES-BARRE, PA.

An Associate Company of American Chain Co., Inc.

In Business for Your Safety

Branches or Distributors in all Principal Cities

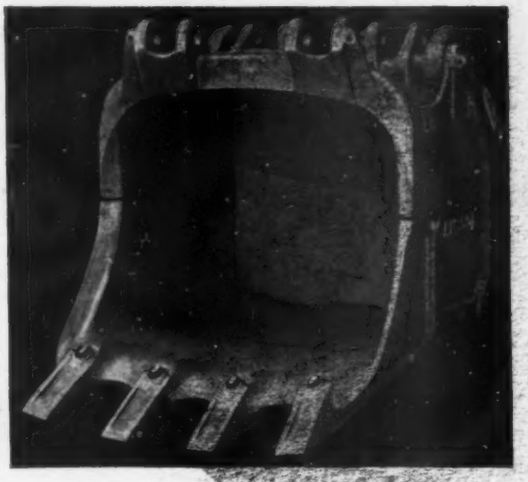
GREEN SIGNIFIES SAFETY

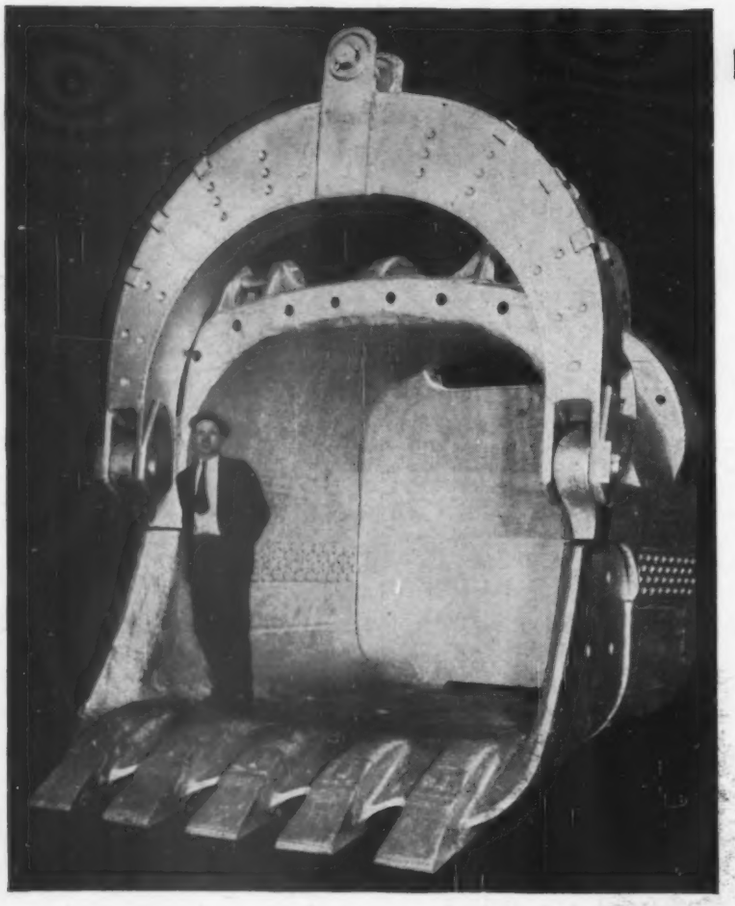
TRU·LAY Wire Rope

ALL AMERICAN CABLE COMPANY ROPES MADE OF IMPROVED PLOW STEEL ARE IDENTIFIED BY THE EMERALD STRAND

Now Available

from ½ yard to 18 yard





AMSCO Renewable Lip Dippers!

AMSCO Renewable Lip Dippers (U.S. Patent No. 1,945,064) are now available in all sizes from ½ yard to 18 yards. To all sizes, from the smallest to the largest, accrue the same profit making values — *faster filling* and *quicker dumping*. Because of the correct placement of the teeth at the lip corners, the thin cutter edge lips, the smooth body interior and the correct body taper their use insures increased yardage.

Over 600 AMSCO Renewable Lip Dippers are in use today on every type of digging job, an excellent testimonial to the rapid acceptance by shovel users of these new, improved design dippers.

Operating features of AMSCO Renewable Lip Dippers include quick and easy change of the digging lips in the field by simply knocking out four keys and loosening two U-bolts, a range of lips to suit every digging requirement and the back lug arrangement to fit the dipper stick of every make of shovel.

600 users can't be wrong — get the details on AMSCO Renewable Lip Dippers from your shovel maker or at our Booth at the Road Show.

See the Amsco Exhibit at the Road Show!

AMERICAN MANGANESE STEEL COMPANY

Division of American Brake Shoe & Foundry Company

377 East 14th Street, Chicago Heights, Ill.

Foundries at Chicago Heights, Ill.; New Castle, Del.; Denver, Colo.; Oakland, Calif.; Los Angeles, Calif. Offices in Principal Cities

AMSCO

TRADE MARK REGISTERED

JEFFREY

FOR YOUR EVERY REQUIREMENT

As a Producer of cement, lime, gypsum, sand, gravel, crushed stone, and other nonmetallic minerals . . *you know* that the efficient and steady supply of materials depends upon the successfully planned material handling systems.

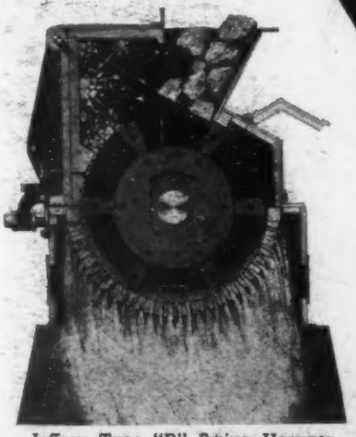
As a Producer of all types of Material Handling Equipment . . *we know* that Jeffrey Engineers will design and install equipment that will do your particular job efficiently and at the lowest possible cost . . whether your requirements call for Conveying, Elevating, Screening, Feeding, Washing, Reducing or other units used in the production, preparation and handling of material.

The high efficiency of many large and small plants . . Jeffrey equipped . . throughout the United States demonstrates the importance of installing dependable equipment that will give years of trouble-free operation . . that will be unfailing in its steady supply of material. Jeffrey Material Handling Equipment is a positive guarantee of the best results.

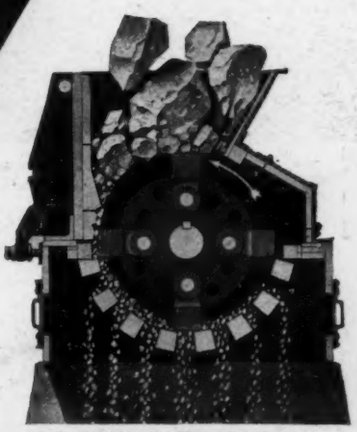
In a brief way we are showing within these four pages the complete service that can be rendered by Jeffrey Equipment in handling the materials of your industry. Space does not permit showing everything that Jeffrey makes . . but just as you can count upon Jeffrey Equipment to perform your handling and reduction operations with the greatest dependability and economy . . you can count on us to give you more detailed information if you so desire it.

Jeffrey Engineers will be glad to work out the most efficient and economical solution to your problems . . will be glad to work right with your engineers, in the field . . to better reduce your costs . . to see that the job is done to your complete satisfaction.

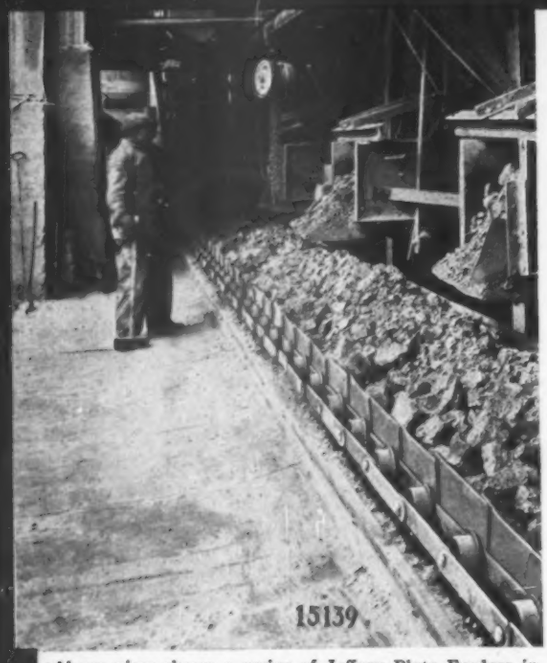
REDUCTION MACHINERY



Jeffrey Type "B" Swing Hammer Pulverizer (Patented)



Jeffrey Miracle Hammer Crusher (Patented)



Above view shows a series of Jeffrey Plate Feeders in a Slag Plant, delivering to a Jeffrey Steel Apron Conveyor. Jeffrey Steel Apron Feeders are also used for handling materials from track hopper or bin to pulverizer, elevator or conveyor.

View below shows the Jeffrey "Airplane" Belt Tripper in use at Fort Peck Dam aggregate plant. It piles material anywhere along the entire run of the conveyor.

The view below shows the aggregate storage plant at Fort Peck Dam. The Jeffrey Belt Tripper shown in the photo next above may be seen in this view on the top structure above the piles of material.

Jeffrey Steel Apron Conveyors and Feeders:

Jeffrey Steel Apron Conveyors are ideal carriers of material. Overlapping double beaded flights form continuous trough . . . practically no leakage or waste. They will operate on horizontal or incline. In many operations where an even, slow feed is required, the Steel Apron Conveyor is commonly used as a Feeder, which can be furnished in various lengths to suit conditions.

The Steel Apron Conveyor is ideally suited as an intermediate Carrier in transferring coal from one unit to another in Boiler House Service. Complete data on request.

● ● ●

Jeffrey Portable Loaders and Conveyors:

The Jeffrey Portable Belt Conveyor will materially reduce the cost of reclaiming sand, gravel, crushed stone and similar loose material about your plant. Furnished with 14″ troughed belt in 22 ft. and 28 ft. lengths; 16″ troughed belt in 18, 24 and 30 ft. lengths; and 24″ troughed belt in 24 and 30 ft. lengths. Equipped with electric motor or gasoline engine.

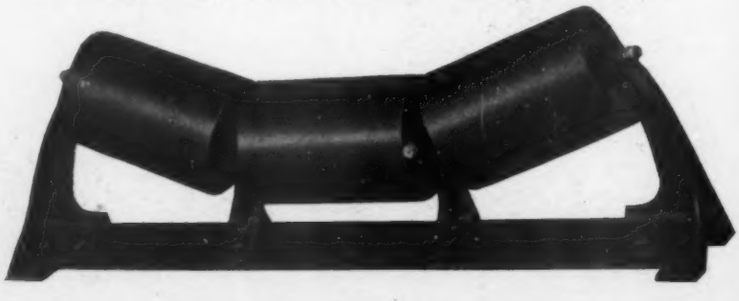
The Jeffrey Portable Bucket Loader is so constructed as to both dig and load such material as sand, gravel, crushed stone, coal, ashes, cinders, etc. Catalog No. 530—covers the Jeffrey line of Portable Handling Machinery.

Jeffrey 24″ Troughed Belt Conveyor (left) Type 203-A. Equipped with swivel wheels which are easily turned at right angles to the machine to permit serving a wide storage area.

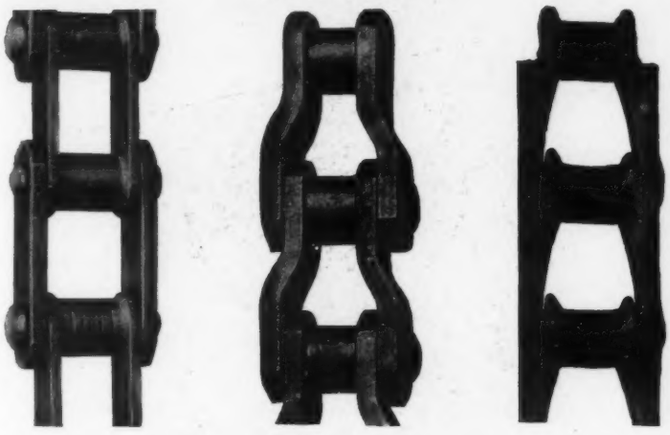
Jeffrey Belt Conveyors:

Jeffrey Belt Conveyors are being used extensively for the handling of sand, gravel, crushed stone, etc. Provide a steady stream of material and operate at low cost on the famous Jeffrey Reliance Idlers, which were the choice for moving some 14 million bank yards of material at Grand Coulee Dam. Jeffrey Belt Conveyors also served the various operations at the Fort Peck Dam aggregate plant as well as the world's largest sand and gravel plant at Grand Coulee.

Catalog No. 610 Completely describes Jeffrey Belt Conveyors.



Chains for Conveying, Elevating and for Drives:



The complete line of Jeffrey Chains is the outgrowth of more than fifty years of experience in serving the elevating, conveying and driving needs of industry. You need not be afraid to order Jeffrey Chains . . we know chains . . know how to make them exceptionally well. There is a type and size . . malleable, "Supermal" and steel . . to meet every requirement. Also a full line of attachments, sprockets, etc. Catalog No. 417 lists them all.

● ● ●

Jeffrey Bucket Elevators:

No matter what class of loose materials is to be handled; what capacity; or under what conditions; a Bucket Elevator can be found in the Jeffrey line to exactly meet the requirement.

A complete line of standards have been worked out by Jeffrey Engineers to meet the demand of the industry. There are the Super-capacity and Heavy Duty, Vertical and Inclined, Intermittent and Continuous types. Furnished with Buckets of Malleable, "Supermal" or steel for chain or belt mounting. Casings can be made dust tight on order.

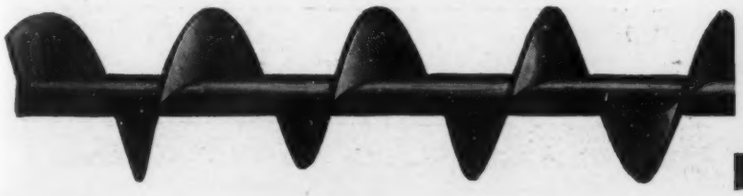
Catalog No. 565 embodies the most complete line of Bucket Elevators ever offered the Industry.

● ● ●

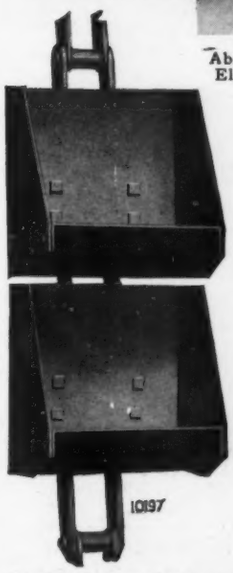
Jeffrey Spiral Conveyors:

Jeffrey Sectional and Helicoid Spiral Conveyors have a broad application for dependability and economy in the Rock Products Industry. They handle coal, lime, gypsum, cement, and other loose materials. Have no return strand, installed in small space—fed or discharged at any point.

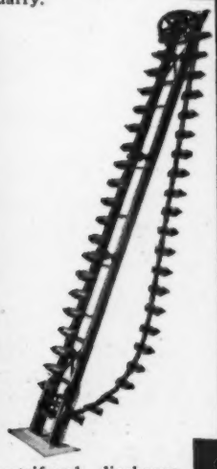
Catalog No. 495 goes more into detail.



Above—a Super-capacity Jeffrey Bucket Elevator installed in a large stone quarry.



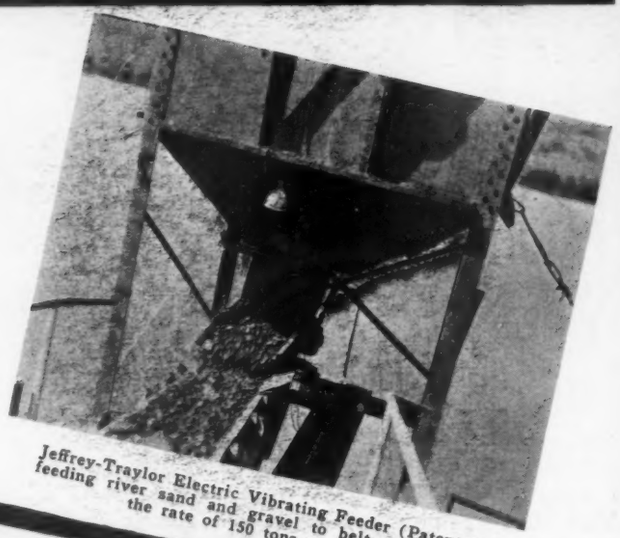
Style D Continuous Bucket (above) used for handling broken stone, sand, gravel, coal, etc.



A vertical centrifugal discharge Bucket Elevator (left—above) and an Inclined centrifugal discharge Bucket Elevator. The view below shows a Jeffrey Spiral Conveyor distributing materials to storage silos in a large stone quarry.

JEFFREY

Jeffrey-Traylor Electric Vibrating Screen (Patented). All vibration confined to the screen. Suspended from vibration absorbers. Entirely electrical—no mechanical wearing parts.



Jeffrey-Traylor Electric Vibrating Feeder (Patented) feeding river sand and gravel to belt conveyor at the rate of 150 tons per hour.

A COMPLETE SERVICE

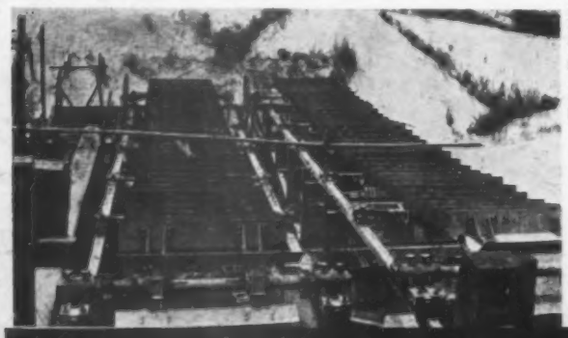
With the Jeffrey-Traylor Electric Vibrating equipment, Jeffrey is able to offer all industries a series of units which are revolutionizing material handling operations . . in feeding, conveying, screening, barrel-packing, cooling, drying, and other processes.

The basis of Jeffrey-Traylor equipment is *balanced high frequency vibration* under *absolute control.* Not until you have seen Jeffrey-Traylor equipment at work will you have a full conception of its many merits. You will want to know more about Jeffrey-Traylor Equipment and how it will work for you . . you will want to know about some of the jobs to which this equipment has been successfully applied. Catalog No. 620—hot off the press, gives you all this. Send for your copy.

Jeffrey-Traylor Vibrating equipment rounds out our line of material handling equipment . . a complete service in your field.

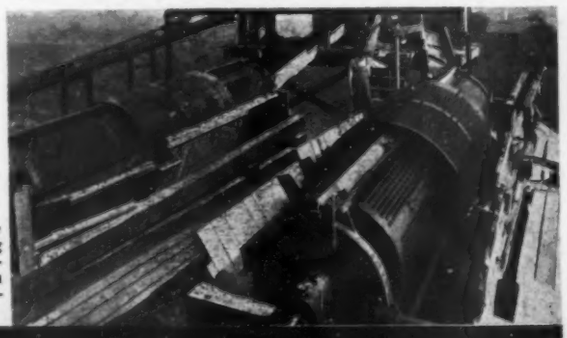
We sincerely hope you will find among the varied and diversified applications of Jeffrey Equipment shown on these four pages, some helpful, profitable suggestions for improving your own processes.

We have had years of experience . . and we are willing to pass this experience on to you. Call on us.

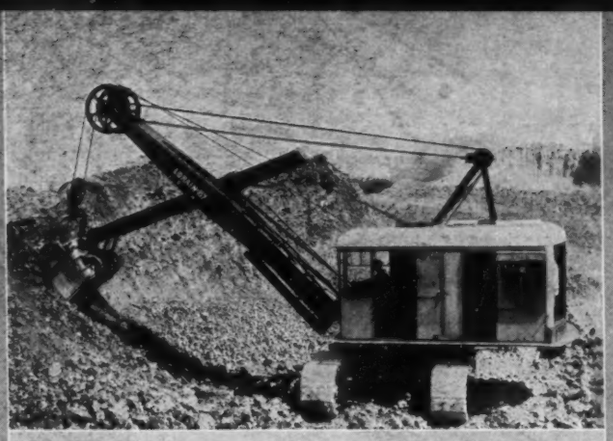


Left — Jeffrey Sand Settling Tanks, with steel tanks, operating side by side, in a large producing plant.

Right — Jeffrey Revolving Screens installed at a Sand and Gravel Plant.



THEW and UNIVERSAL present 5 NEW LORAINS*



2-YARD LORAIN-87

New from crawler treads to boom tip—a Center Drive, convertible unit with the newest development in shovel booms since the shipper shaft boom.

BIG DRAG LORAIN-95

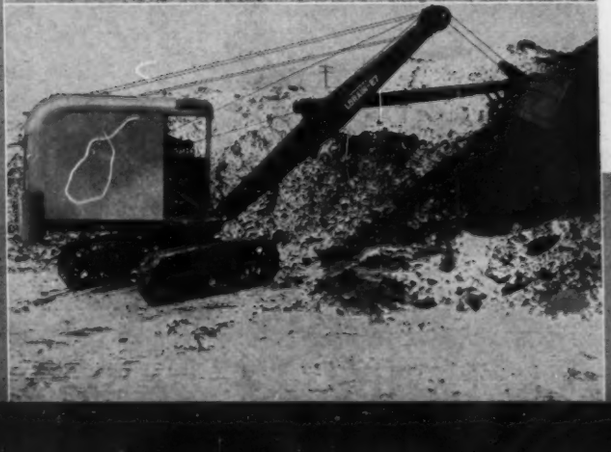
Specially designed—and Center Drive built—for big capacity, long range, dragline, clamshell or crane service—mounted on a crawler 18 ft. long.

1-YARD LORAIN-55D

A heavy-duty 1-yd. shovel—full 15-ton crane capacity—with longer boom, longer, heavier, crawler; Diesel powered for increased output, lower fuel cost.

3/4-YARD LORAIN-40 Truck Shovel

L-40 minimum weight and balanced design now permits offering you ¾-yd. shovel output and earnings combined with motor truck mobility.



3/8-YARD LORAIN-27

A ⅜-yd. full-revolving unit, built to a standard of quality equal to or better than that of any excavator, regardless of size or price—with special trailer.

★In presenting these five new Lorains for 1936, Thew and Universal express their confidence in the future of the Construction Industry.

In building these five new Lorains to the tried, tested and proved Center Drive design—and in refining and greatly improving all Lorain models—Thew and Universal again express their confidence in the continued ability of all Center Drive units to move more dirt, faster and at lower costs . . . a fact well proved by Lorain field performance.

5 New Models . . plus these other improved LORAINS

LORAIN · 77
1½-yd. shovel—20-ton crane—Diesel powered

LORAIN · 75D
1¼-yd. shovel—18-ton crane—Diesel powered

LORAIN · 45
Heavy-duty ¾-yd. shovel—Diesel powered

LORAIN · 40
¾-yd. Capacity, Strength, Power; ½-yd. Weight

LORAIN · 37
⅝-yd. Shovel, Crane, Clam, Drag

LORAIN · 30
½-yd. Shovel—with special trailer

THE THEW SHOVEL CO., LORAIN, O.
THE UNIVERSAL CRANE CO., LORAIN, O.

GROUND make their any weather

PROGRESSIVE operators, whether the job is big or small, know that Firestone Ground Grip Tires give them the super-traction they need—save wear and tear on their equipment, and speed up the work. In addition to their use on buggies, road graders and other earth working equipment they are finding wide use on contractors' trucks and cars, where they must get through regardless of road or weather.

Firestone patented construction features are responsible for the amazing success of the new Firestone Ground Grip Tire. It is easy to see why the massive tread, with its scientifically designed and

Winchell Library of Geology

GRIP TIRES
own road . . . in . . . anywhere !

widely spaced bars of tougher rubber, gives you super-traction, and is self-cleaning. Of equal importance is the fact that the body of this tire is built with Gum-Dipped high stretch cords, giving the tire great strength to withstand the terrific stresses and strains of heavy pulling with low air pressure. In addition, there are two extra layers of Gum-Dipped cords under the tread, locking it inseparably to the cord body. These are patented Firestone construction features used in no other tire.

Equip now with Firestone Ground Grip Tires — they will save time and money for you on every job. When ordering new equipment be sure to specify Firestone Ground Grip Tires—the greatest traction tires ever built.

• • •

Listen to the Voice of Firestone featuring Richard Crooks or Nelson Eddy — with Margaret Speaks, Monday evenings over Nationwide N. B. C.—WEAF Network

© 1936, F. T. & R. Co.

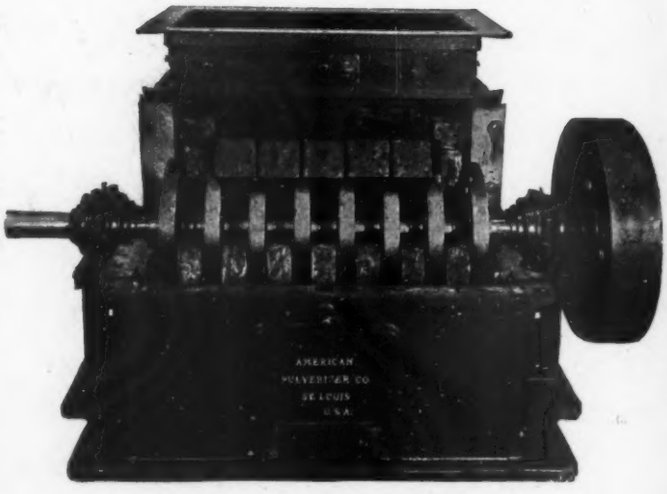
Firestone

Front View Showing Breaker Plate Adjustment.

CUT Production COSTS

with this modern equipment

AMERICAN equipment is backed by over 25 years' experience in designing and manufacturing reduction equipment. If you want a rugged and compact unit that will handle more tonnage per hour and produce the proper kind of product, be sure to investigate the AMERICAN.



View Showing Back Cover Removed.

AMERICAN portable crushing plant reducing "man-size" stone to 3/4" aggregate product in one reduction at the rate of 300 tons per day.

SPECIAL FEATURES

Compact Design—Heavy Cast Construction
Cast Steel Adjustable Platten
Cast Steel Discs—Two Inches Thick
Heavy Alloy Steel Shaft
SKF Spherical Roller Bearings
Crushing Chamber Manganese Lined
Lower First Cost—No Slivers or Chips

Let us help you solve your Reduction Problems.

AMERICAN PULVERIZER COMPANY

1245 MACKLIND AVENUE, SAINT LOUIS, MISSOURI

Rock Products

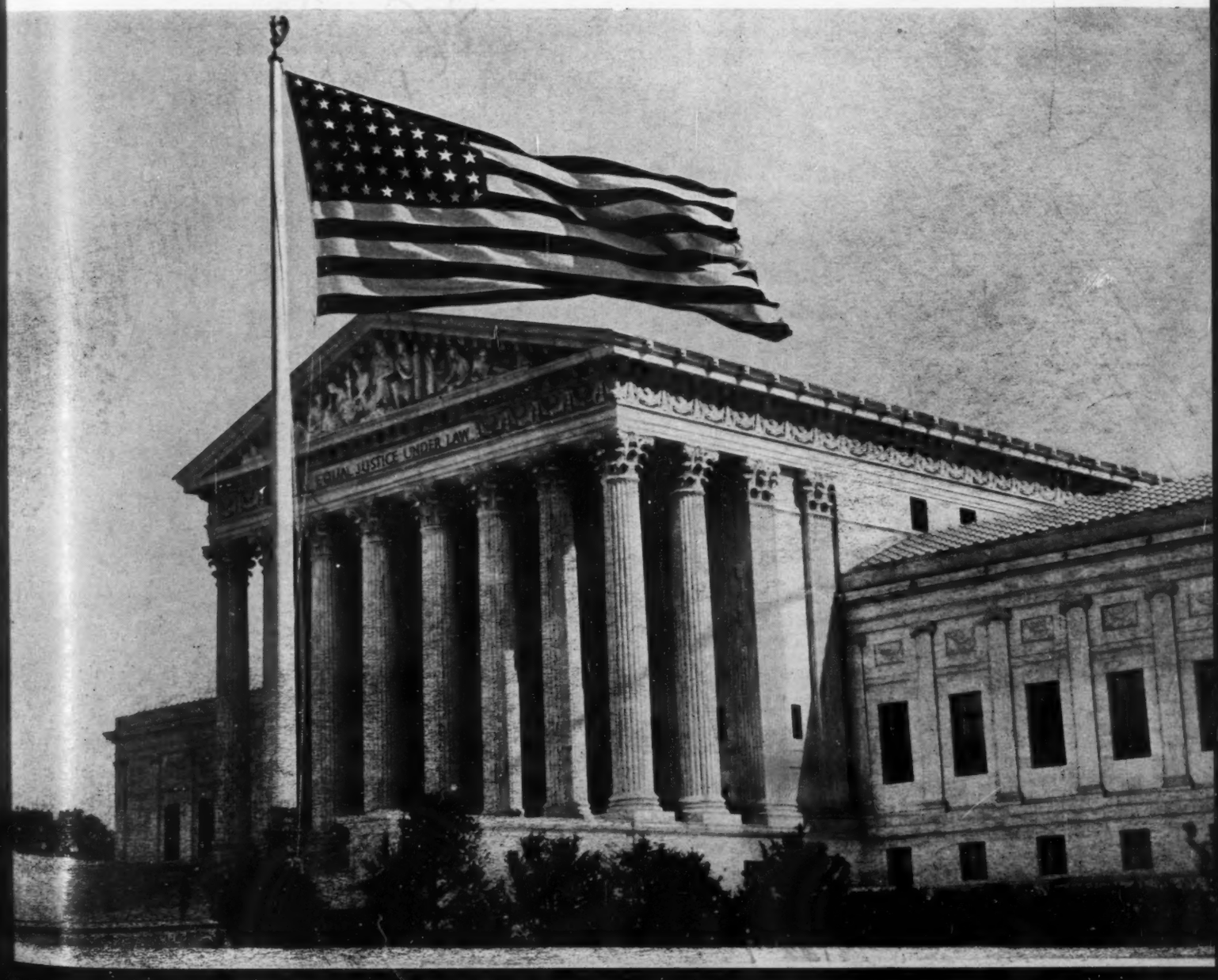
With which is Incorporated CEMENT and ENGINEERING NEWS Founded 1896

Volume XXXIX | Chicago, January, 1936 | Number 1

Industry 'Fed Up' on Attempted Policy of Wages Without Work—Profits Without Production

WE LISTENED to the President's annual message to Congress "On the State of the Union," and we gathered from it (among other reactions), that the President believes that only "Big Business" is opposed to some of his New Deal policies. Returns from our own Annual Questionnaire "on the state of the rock products industry" prove conclusively that practically *all* this industry is 'fed up' on most all the New Deal. Moreover, this was all voluntary expression, for we had no intention of raising political issues; and no one of our questions was in any sense political. Certainly, with the exception of a score or so cement and gypsum companies, the rock products industry is not composed of "Big Business" units.

Solid stone, concrete and steel, new U. S. Supreme Courthouse is said to be the most permanent structure in the United States
Acme Photo



Wages and Hours

Do you believe that industry should maintain wage and hour provisions on the approximate level specified in the former NRA codes?

More than half of the industry says "yes"—moreover, these former code provisions have been generally maintained; there have been, apparently, few deviations from the established wage scales, but 48 hours a week has been substituted in some instances for the 40-hour code week. About 25% more, added to those voting an unqualified "yes," voted "yes" on wage scales but "no" on hours per week, because of the well-known seasonal nature of these operations.

• • •

To accomplish this purpose do you believe that industry should have the right to so regulate itself as to enable it to stabilize its markets?

Three-fourths answer this "yes." Most of the others are noncommittal. Some qualify their assent by such remarks as: "if practicable"; "but not by government dictatorship"; "by unrestrained competition"; "with slight government limitations"; "only as to uniform cost-keeping"; "should have the right but won't do it." Objectors say: "impossible"; "too many liars"; "capitalistic industry is self-regulating"; "law of supply and demand governs"; "let dog eat dog"; "only need to be free of government interference"; "only government control will answer." Fortunately, as already noted, these irreconcilables constitute but 10% of all returns.

• • •

To accomplish this purpose do you believe that a majority in an industry should have the right to bind all its members in an agreement or contract?

If this could be done, fair and ethical practices could be made an objective of a contract between members of an industry, enforceable at law in civil suits, without any other government regulation than an enabling law: the courts would decide in specific instances if such contracts were contrary to the public interest.

More than half of those answering said "yes"; but many objected to a mere majority, some suggesting two-thirds, others three-quarters, and a few as much as an 85 or 90% majority. Also there are numerous qualifications, that means would have to be found to safeguard industry progress, protect the small producer, etc.

Those who object are afraid any such regulation would involve abuse; would mean definite price-fixing; would cut down efficiency; that all they want is to be let alone.

Would you favor Federal legislation revising the anti-trust laws to permit such agreements or contracts?

Again, more than half the replies are "yes." These include various reservations such as: "should not allow price fixing"; "only so far as to permit purely voluntary agreements"; "only to prohibit sales below cost"; "if really necessary."

Those who say "no" give various reasons, the predominant one being fear that the small producer would not get a fair break; others are: "system would collapse without a dictator"; "let well enough alone."

• • •

Keeping in mind that you are a purchaser of many commodities as well as a seller, do you think such agreements could be carried out without eventual monopolistic control of production or price or both?

This time considerably less than half—about 40%—of the returns were "yes"; slightly more were "no," and about 15% noncommittal. There are a considerable number who believe that competition between different products for the same use would automatically keep prices within reasonable or fair limits. There is some basis for this belief; but it might not work, for there certainly would be a tendency to follow the competitive material upward in price, even though a differential were constantly maintained. Nearly all, of course, believe that any collective price making would involve some government regulation, control, or supervision. In the final analysis these terms all mean pretty much the same thing to them—government *interference,* for better or for worse!

It does not appear to us that a revision of the anti-trust laws to permit contracts between members of an industrial group to mutually observe certain fair practices, or to submit to paying prescribed penalties as liquidated damages (such as the final code of the cement industry included), would necessarily involve much government regulation, since the courts would be called upon from time to time to enforce such contracts, and they would determine upon the facts in each instance as well as upon the kind of contract whether enforcement was in the public interest or not. The federal courts are the farthest removed from politics of any branch of our government; and such decisions, like decisions in patent cases, would in general be above question of judicial fairness.

• • •

It seems to us that a good deal of difficulty arises in confusing highly manufactured commodities that have no real basis for uniformity of prices, such as machinery, with staple commodities, which in the nature of things should find a uniform price level; do you think this distinction should be made? Do you think the Guffey Coal Act, or something like it, is the answer?

Only about one-third of the questionnaires say "yes"; and half of these do not believe anything like the Guffey Coal Act is the answer. Considerably more than one-third answer "no"; and about one-fourth are noncommittal.

The NRA codes were more popular, and apparently worked better, in industries producing standardized staple commodities—presumably because such industries are more easily adapted to price control. But bearing in mind that the primary purpose of NRA was not to control prices directly, but to raise the tone of business morality by outlawing sharp practices, there really is no fundamental difference between one industry and another. They all needed moral stimulus.

• • •

What kind of government control would, in your opin-

ion, assure you a fair price on the commodities you have to buy? Or would you be willing to let the aggregate intelligence in an industry fix prices that would be economically correct—low enough to keep new competition within reasonable bounds, low enough to stimulate new uses and greater use, high enough to insure a reasonably efficient producer a fair profit, but not necessarily every producer a profit; not so high as to stifle initiative toward improvement in processing and equipment?

A very decisive majority are for letting the aggregate intelligence of an industry decide on fair prices, and a very small minority (not over 1½%) favor government control or regulation of prices. However, nearly half of all returns are noncommittal on this question—which we admit is a poser!

Of course, the fact is that the sellers of a product seldom have an opportunity to fix their own prices, either individually or collectively, for very long periods at a time. The buyers usually find ways to get prices that *they* consider fair. Were sellers legally permitted to fix prices collectively, apparently a majority in the industry believes they would be guided by economic wisdom. Well, that's a start: we don't see how fair prices ever will be arrived at collectively either with or without government regulation unless there *is* aggregate intelligence in an industry—more aggregate intelligence than exists today. But we are acquiring more intelligence; NRA experience helped!

One who had much experience in trying to get one of these industries to live up to its NRA code says: "No government or industry control can assure a fair price. In order to embrace different conditions existing within any industry, the limits of regulation would necessarily be so wide as to have no value." A skeptic says: "The aggregate intelligence of any industry is 'give me.' One of the things making capitalism workable is free competition. Without this it will collapse unless it have a dictator." We believe recent experience has taught, what we have continually contended it would, that cut-throat business methods can not be eliminated by law or regulation; but only by raising the average intelligence and moral plane of the entire group composing an industry—a very slow and discouraging process, yet one that is continuously going on all the time this discussion is taking place.

• • •

Are you one of those who take the stand that it is useless to attempt to control prices and production collectively unless the government itself will police industry and enforce such agreements as law?

Just about half the industry says "no"; one-fourth says "yes," and the others are noncommittal. Some of those who approve government policing say: "But we'll emigrate to Russia when it happens"; "provided government officials have some horse sense"; "but we are not in favor of it." So our conclusion is that even though many howled about the failure of the codes because of lack of police power to enforce them, mighty few really want the government to have any such police power over industry.

WPA Universally Condemned

The Works Progress Administration as at present conducted is almost unanimously condemned; and in spite of the fact that it was announced as a program to achieve lasting and desirable public improvements, very few of the producers of construction materials which enter into such improvements have derived any benefit from the millions spent, nor do they expect to derive any benefit from what remains to be spent. WPA has used some portland cement, but most of its aggregate requirements have been met by relief labor, so-called. Many of those who have derived some business from this source are convinced that the ultimate cost to them as taxpayers will far exceed any present benefit.

Opinion is universal that control of WPA is entirely political and consequently very inefficient. Some opinions on this angle are vehement. More temperate ones are: "If one-half of the WPA money were used to relieve actual need, and if this was handled through established organizations free from politics, it would accomplish more actual relief than WPA ever will. If the other half were used to balance the budget, it would do more to encourage private business and private spending than WPA will ever do." And this one: "WPA is OK in principle, but poorly executed because ward-heelers are the executives instead of capable, law-abiding citizens, of which there are many, but they don't get a chance because they are not *vote getters.*" And: "The efficiency of WPA is very, very low. The amount of permanent good derived is not sufficient to consider it an asset, and the tax-payers' properties should not be bonded by the Federal Government to provide funds to continue it"—which brings out the thought, often overlooked, that the national debt actually is a mortgage on our personal property, our homes, our business enterprises, our incomes and our children's incomes-to-be!

One who we know is exceedingly fair-minded and logical in his conclusions writes: "So far WPA as Hopkins administered has done us a lot of harm. It has taken the spending of public works money away from established agencies and placed it in the hands of inexperienced persons who are in charge of newly created spending organizations. Also it has had the effect of delaying highway construction in this state an entire year. Perhaps it was intended to do so, but I think not. We are getting, and will get more, WPA business; but I believe we would now, and in the immediate future, be much better off without it."

So disgusted with WPA are nearly half the producers who answered our questionnaire that they would abolish *all* attempts of the Federal Government to relieve unemployment. That's going a long ways, and the result was surprising to us, because we know how dependent this industry has been on public works as a major market in years gone by. Of course, many differentiate between WPA and PWA. The latter, the Public Works Administration, while it has financed many projects not economically justified, has done business in a business-like way.

Prices and Production

It appears from the latest statistics of portland cement production and shipments that shipments in 1935 were only slightly less than in 1934—perhaps 2,500,000 to 3,000,000 bbl. less, or 1½%. Prices changed very little. Shipments of lime and gypsum, due to the housing program, were probably about 10 or 12% above 1934, and prices were about the same. Production of sand, gravel, crushed stone and slag by commercial producers, was greater, apparently, in spite of the delay in starting public works, and in spite of the competition of local government units.

More than half the producers reported increased production ranging all the way from 10 to 300% above 1934 production. A great variety of reasons were given for these increases, the major one being the pick up of private construction. Many attributed their increases to more effective sales effort, a few to lower prices made possible by greater volume. Public works and railway ballast also resulted in many increases. In some commodities, including highway material and agricultural limestone, the improved purchasing power of the agricultural sections was an important factor. The increase in iron and steel production of course added materially to the business of limestone flux producers.

The 25% of producers who reported less production attributed their unfortunate condition to a great variety of causes, delay in starting highway programs being the most common one. Relief labor operated quarries and pits are another fairly common cause for less business. Gas tax diversion is another.

Another approximately 25% of producers reported no change compared with production in 1934. The demand for industrial sand remained about the same, but there was a very considerable increase in consumption of glass sand due to the housing program.

Prices in the sand, gravel, crushed stone, slag and allied industries apparently changed very little compared with those in effect in 1934. About 10% of the producers reported better prices; about 20% of the producers lower prices, and the remaining 70% of producers no change in prices. Those reporting increased prices of from 5 to 25% gave as the principal reasons, better understanding of costs, more coöperation among producers and more confidence in the integrity of one's competitors. Some instances of better prices were due to happy location of jobs near the producing plant. Prices were increased to offset higher costs in some cases. Many are frank to say that their better prices were the result of NRA code experience.

Those whose prices were lower than in 1934 naturally blamed this condition on more severe competition of one kind or another, and in numerous instances this condition was attributed to the abandonment of the NRA codes. Opening up of local quarries and pits, operated by relief labor, apparently had considerably more deteriorating effect on prices than it did on production. Price reductions varied all the way from 10 to 75%.

Much Better Outlook

Three-fourths of the producers reporting expect better business in 1936, and by far the greater number of these base their expectations on the general improvement of all business, particularly, of course, private building. Some few think that the election year insures much public spending—for political purposes. Some look for more production but lower prices because they expect competition to become keener. Many emphasize the point that we are coming out of the depression because of returning business confidence and initiative *in spite of* rather than because of government efforts. Some few defend the New Deal efforts.

The few (less than 10%) who expect worse business think it will be due to political factors and to the anticipated return of "the chiseler."

• • •

Getting the Government Out of Business

We asked a very innocent question, in entire good faith, hoping to add to our repertory some constructive suggestions on how to get the local governments out of competition with legitimate producers of sand and gravel and crushed stone. The result was an avalanche of denunciation of the New Deal and all its works, and the very frequent suggestion that it be voted out of office next November. Many a vehement remark is accompanied by "and I voted for it," or "and I am a Democrat, too."

We did not get many constructive suggestions on how to discourage this local government competition—none in fact that we have not already suggested in these pages. It is essentially a local problem, and as one producer aptly says, the widespread adoption of sand and gravel and crushed stone production for work relief projects is in some measure at least accounted for by the lethargy of the producers themselves, and other business men, in not being able to make constructive suggestions to local authorities on how they could spend work relief funds to better advantage. Doubtless local business men were as sadly lacking in organization to meet such emergencies as were the local and national governments. The experience will be valuable if it leads to better organization of local business to render civic service.

• • •

In Conclusion

This is only a small part of the valuable suggestions, ideas and inspiration the editor has derived from a study of the several hundred questionnaires his good friends and collaborators so generously took the time and trouble to contribute for his enlightenment. The results of further study will be manifest in many issues of Rock Products.

One of our good friends closes his questionnaire with the remark: "This was a hell of a job—you would have got more answers if you had asked fewer questions."

Thanks, old man, for the suggestion, which we will remember next year; but, if you think filling in one questionnaire was some job, think of ours in analyzing and studying and absorbing the contents of several hundred of them—and be patient if this beginning is not as complete as we would like!

A *METHOD* of *ASCERTAINING* the Commercial Use and *VALUE* of *LIME*

By Mary E. Squire,
Chemist, Allwood Lime Co., Manitowoc, Wis.

AFTER TWENTY-ODD YEARS OF RESEARCH work in the chemistry, geology and paleontology of Allwood limestones, it has been proven to our complete satisfaction that the old established method of relying on chemical analysis alone to determine the commercial use and value of lime is all wrong; that a knowledge of geological structure and paleontological content is equally essential.

At best, chemical analysis of a limestone gives the investigator no more than 50% of the information necessary to establish a standard "uniformity of quality" and "invariable suitability" for any specific use. Hence, geological analysis must supplement and complete chemical analysis to accomplish the desired ends.

The writer is fully aware that the above is a radical and startling statement, but a brief outline of two problems of the many that have been investigated, and how they were successfully solved, will make clear and convincing the above statement.

Cream Neutralizer

The first problem: A lime was desired that would neutralize the hyperacidity of cream in the manufacture of butter, where the lactic acid should be of normal strength only, approximating fresh cream. This lime should not destroy the fine butter flavor, as do most mineral neutralizers, and it must contain only such ingredients as to make it fit to eat—in other words, obey the Pure Food Laws completely. It must leave no residue in the buttermilk or affect the pans in any way, and yet reduce the hyperacidity effectually.

The first steps to discover what lime was needed were to follow the established rule of accurate chemical analysis, but this was the result: In a selected deposit of high grade stone, at least five slightly different analyses were obtained, as follows:

	(1)	(2)	(3)
Silica	None	0.14	Trace
Iron oxide	0.32	0.28	0.34
Alum. oxide	0.23	0.16	0.34
Calcium oxide	58.75	59.68	58.60
Magnesium oxide	40.10	39.76	40.19
Sulf. anhydride	None	None	None

	(4)	(5)	(6)
Silica	0.20	0.98	None
Iron oxide	0.28	1.51	0.32
Alum. oxide	0.92	0.48	0.78
Calcium oxide	59.00	56.65	60.37
Magnesium oxide	38.00	39.55	37.85
Sulf. anhydride	None	None	None

Please note that these stones show varying amounts of calcium and magnesium, with only slight differences. So it was decided to use the stones (1), (2), (3) and (4) for this purpose; on test, each one giving just as satisfactory results as the other.

Editor's Note

THIS is probably the most valuable article for the lime industry Rock Products has published in its 30-odd years of service to this industry. The author needs no introduction to the lime industry, or to Rock Products' faithful readers, because in past issues something of her work has been published; and Miss Squire herself is known personally to nearly all lime manufacturers.

For the first time in any language are here recorded "the secrets" of identifying limestones from which two of the most valuable of all lime products are manufactured. Perhaps we take an undue liberty, but we cannot forego giving in Miss Squire's own words her reasons for divulging these hitherto carefully guarded secrets. These were contained in a letter to the editor, written now some three years ago. Fortunately Miss Squire is still "carrying on."

Miss Squire wrote: "As the years leave on my back their increasing burden, and I fulfill my duties with greater and greater reluctance because of physical laziness. I look forward to the end of the trail and ask myself, 'Shall all these twenty years of research work which have proven so profitable to the Allwood Lime Co. be forever buried under the slab that covers me in the end, or will some younger student be inspired to carry on?'

"And so I have written an article for publication in your magazine, setting forth such facts as should not be lost. It necessarily embodies some of the previous article that you published.

* * * * *

"We are still carrying on after years of wretched business; unable to work steadily, we still are caring for 16 married men of our force, and we are able to give them shelter and so far, food. We, like many others, are living in the hope that this drastic depression may prove to be merely a business depression and not the end of an economic epoch that must be replaced with a new system."

* * * * *

When you lime manufacturers have read this article and appreciated its value, why not drop a line to Miss Squire and say so? She is now in her eighties; and few persons, men or women, have lived a fuller and a more useful life.

—THE EDITOR.

This new product, named "Milk of Magnesia" lime, the Perfect Neutralizer, met with a hearty welcome by the dairy industry, and gave complete satisfaction for a period of ten months. Then occurred such an incident as might happen in any factory. The supply of manufactured Milk of Magnesia lime was quite low; there came a rush order; the supply of manufactured Allwood Vienna lime (an abrasive) was abundant. The chemical analyses of the two limes were as follows:

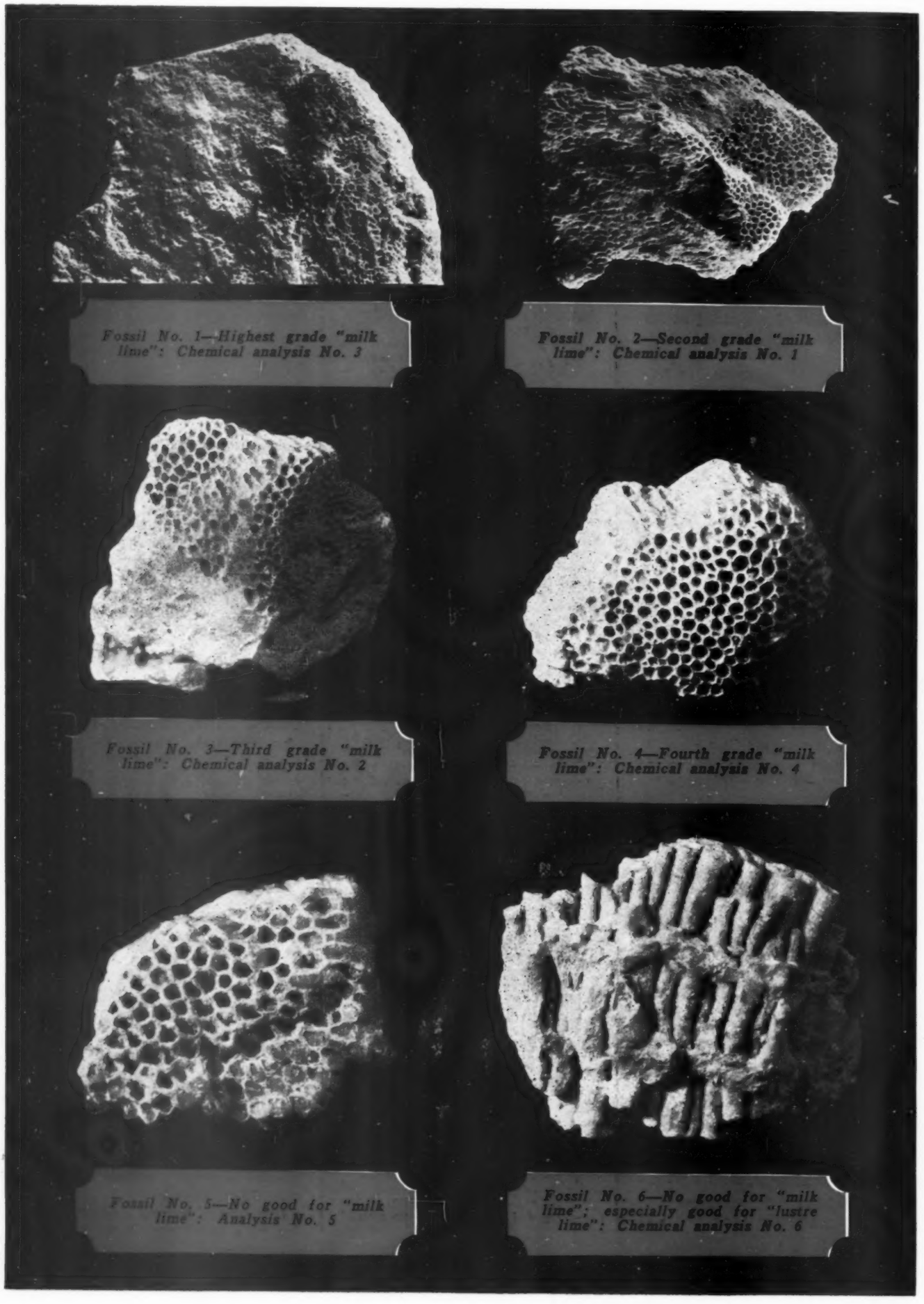
	M. of M.— No. (4)	Vienna— No. (7)
Silica	0.20	0.10
Iron oxide	0.28	0.24
Alum. oxide	0.92	0.51
Cal. oxide	59.00	58.44
Mg. oxide	38.00	39.00
Sulf. anhydride	None	None

A new manager, comparing the two chemical analyses, reasoned as follows: "This Vienna lime is better for neutralizing than the Milk of Magnesia lime. It has more magnesia, less iron and aluminum—it ought to be better." And so he shipped the carload of this abrasive lime to the dairyman, feeling he was protected in so doing by the chemical analysis.

Within a few weeks the Allwood Lime Co. was flooded with letters from the users of this particular car of lime, stating that the lime was not a neutralizing lime; that a gray slime in the bottom of the pans injured the pans and destroyed the flavor of the butter. In fact, this lime was unfit to eat, and they expected the company to pay for the destroyed pans and wasted cream, which, after careful investigation of the claim, the company did, at a total expense of more than fourteen hundred dollars.

Then it was up to the chemist to determine the "why" of this heavy loss. Again the infallible old rule of chemical analysis was resorted to. Innumerable tests made by the writer, and confirmed by Robert W. Hunt & Co., proved the correctness of the chemical analyses Nos. (4) and (7) which led to the catastrophe, but that gave us no reason why the lime should act as it did. Then the chemist left the laboratory for the quarry, and began a series of geological analyses to ascertain the physical differences in the stones.

Going on the axiomatic truth that "nothing can be better than the raw material from which it is made," a search for the fossil remains of the original animal that made these different limestones was begun. In fact, all the steps of burning the stones, and testing the resultant lime on sour milk, which had been carried on for six years on limes chemically selected before offering them to



Fossil No. 1—Highest grade "milk lime": Chemical analysis No. 3

Fossil No. 2—Second grade "milk lime": Chemical analysis No. 1

Fossil No. 3—Third grade "milk lime": Chemical analysis No. 2

Fossil No. 4—Fourth grade "milk lime": Chemical analysis No. 4

Fossil No. 5—No good for "milk lime": Analysis No. 5

Fossil No. 6—No good for "milk lime"; especially good for "lustre lime": Chemical analysis No. 6

the trade, were started all over again, on these geologically selected stones. And in less than three months' work a startling condition was discovered.

First: The "Milk" stone having chemical analysis No. (4) was found to have been produced by a species of the delicate animals known as "Fenestella Elegans," or acaleph, a very minute coral fossil of singular purity, while the lime having the chemical formula No. (7) was made by a much coarser and viscous animal known as "Goniatites Cephalopod," a creature hundreds of times larger than the "Fenestella," and of the snail family. The fossil remains of these animals were found only in the Vienna lime stone deposits, and they are very rare. The photos of the two different fossils are here shown.

Another fossil of a slimy and viscous Mollusk or Clam was found in a still more inferior grade of stone, which can be used only for making building lime, although the chemical analysis most closely approximates the high grade chemical stones, as shown herewith:

CHEMICAL ANALYSIS

Silica	None
Iron oxide	.32
Al. oxide	.78
Cal. oxide	60.37
Mg. oxide	37.85
Sulf. anhydride	None

As there are more than 625 different uses for lime, hundreds of tests for these different uses have been made in the past twenty years, but up to date this stone, made by the Brachiopods, has not been found serviceable for any special chemical use, though it makes a good quality building lime.

The clean, high grade Milk of Magnesia lime is made from the hand selected "Milk stone" only, as we have arbitrarily named it; stones that were made by the delicate coral fossils of the "Fenestella" class. Tests have proved that though the chemical contents are the same, the stones made from the coarser, columnar corals are entirely unsuitable for this purpose, as well as the coarser forms of rod or cell corals. In fact, just as soon as we find the fossil remains, we know today the grade of lime we can make from that stone, because in the Vienna stone used for abrasive purposes we have never found any other fossils than those of the snail formation; in the high grade Milk stone only the delicate, white, shell-like corals have been discovered; and in common building lime the stones made from the clams, or Brachiopods.

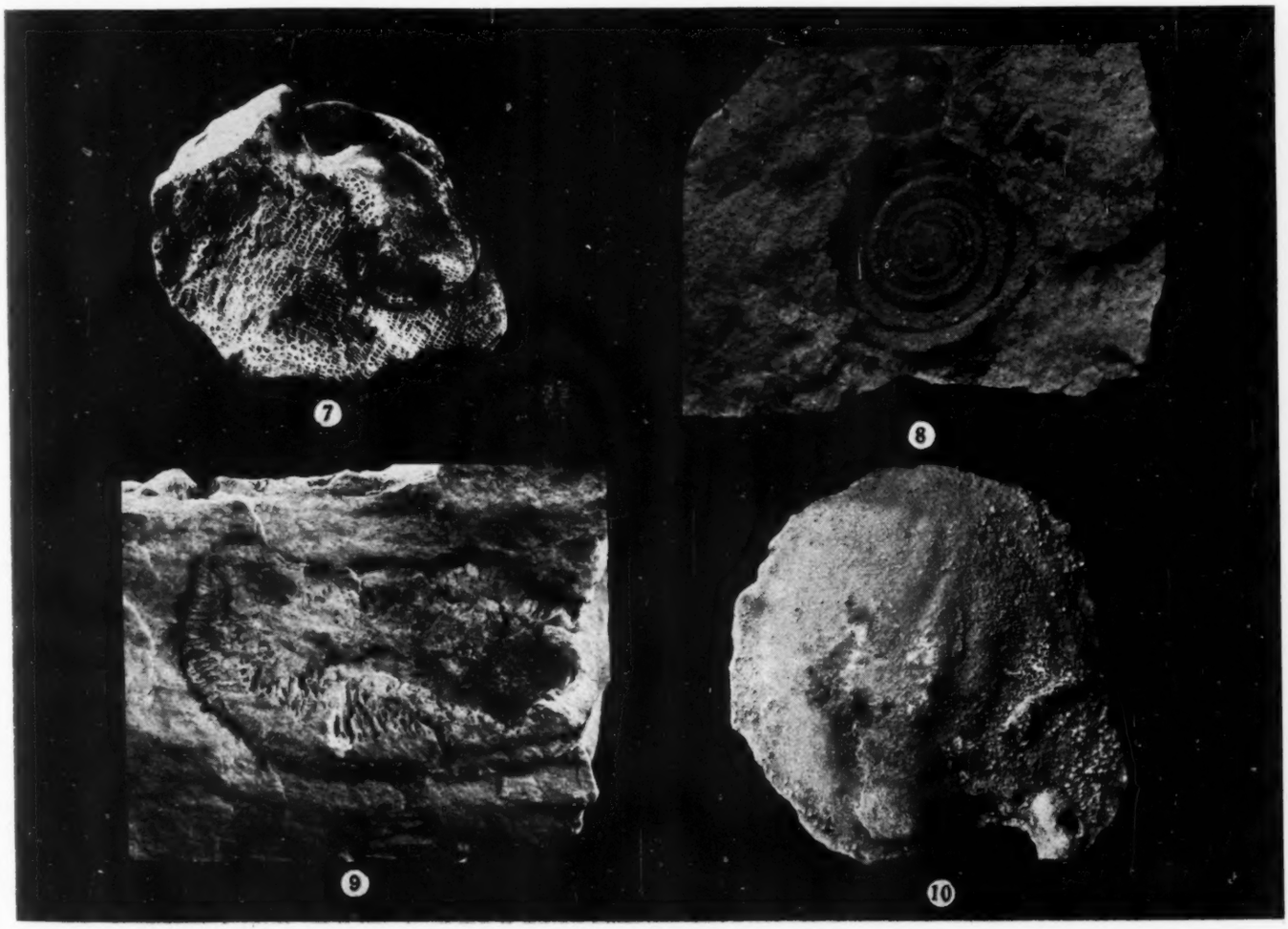
We have special men in our quarry who have been taught the physical differences in our stones and are shown the different fossils therein contained, whose duty it is to select each piece by hand, putting each kind into its own car, where a skilled hoist man deposits it in the proper kiln. After burning, the lime is again hand selected for the mill, where our highest skilled laborer makes final selection before packing—five hand processes. But we know of no other way to make this lime that must be "fit to eat," always "uniform," always "pure" and "efficient."

The second problem that we handled was radically different from the previous one, because while there were no food laws to dictate purity of quality, a specially fine mechanical result was absolutely necessary.

Vienna Lime

The watch and clock manufacturers desired a lime to polish the delicate interior works of watches and clocks, which should be done so perfectly that a scratch clearly visible only under the microscope must not be made, and yet a rough, discolored surface smoothed off and highly polished. This called for an exceedingly pure lime, made from special hand selected stone, carefully calcined.

For years this trade had purchased Vienna polishing lime in 250-lb. containers, obtaining



Fossil No. 7—"Milk of magnesia" limestone: Analysis No. 4. Fossil No. 8—Stone which makes Vienna abrasive lime, and which caused all the trouble of slimy, gray residue when used for neutralizing lime: Chemical analysis No. 7. Fossils 9 and 10 are in stones used for common lime. They are fossils of the Brachiopods

Fossil No. 2—Found in stones which make "milk lime"

therefrom a possible ½ to 2 lb. only that was fit for their use. The balance, unusable for their purpose, was thrown on the dump. When this problem was put up to the Allwood, it was soon shown that chemical analysis alone was of small value in selecting the stone. In fact, tests proved that it was not Vienna stone of any grade that was best suited to this use, but again a stone from the coral formation strata filled all the requirements. This time it was the lime stone made by the coral fossils "Favosites, Acoleph," so rare that in the Allwood quarries, one thousand tons of stone on the average is blasted out before one ton of the "Jeweler's stone," as we have named it, and which is known to the trade as "Horologic lime," is obtained.

CHEMICAL ANALYSIS—HOROLOGIC STONE

	Per cent
Silica	.50
Iron oxide	Trace
Aluminum oxide	2.05
Calcium oxide	57.25
Magnesium oxide	38.10
Carbon dioxide	Trace
Sulphur	None
Loss on ignition (largely water)	1.95

This stone makes a lime practically imperishable. We have specimens that have been taken from the kiln 14 years ago that have not yet pulverized or shown any deterioration, though they have been kept all these years in an open box with no protection other than a tissue paper covering them, and in all conditions of interior atmospheric conditions—hot, cold, moist, dry.

This lime, being so rare, and being also a hand-processed product, retails at 8c per lb. in 40-lb. containers, but the entire 40 lb. will satisfactorily fulfill the purpose of polishing without a blemish. If a lime of *identical chemical content* of a different geological origin would do the same work, we could supply it in any quantity up to 50 tons a day for $8 per ton, but that lime would utterly ruin the steel surface it was supposed to finish.

The Place of Paleontology

It is not the writer's intention to convey the idea that chemical analysis is of no use; on the contrary, in all cases it is 50% of the solution. But that 50% is of very doubtful value without the geological analysis, and as this has hitherto not been considered necessary, it is now set forth for the serious consideration of the profession. Moreover, how can anyone guarantee the chemical contents of an entire carload of lime from a chemical analysis of one or two pounds of that lime, which is all that is ever made? It is impossible. But where the stones from which a lime is made are carefully and intelligently hand selected, all from the same deposit, and if a maverick stone has joined with the regular herd, it is detected and thrown out, the Allwood has proved that "*uniformity*" is assured.

It is evident that the lime manufacturer need spend very little time in ascertaining the geological periods to which the limestones in his quarry belong. What he must know is what kind of lime each different stone deposit will make, and the best use for each kind; the price he can obtain for a lime made for any specific purpose; and whether he has a sufficiently large deposit of that particular stone to warrant his purchasing special machinery to manufacture a new product, and to offer it to the trade. He should know the annual average requirements of the trade for each specific lime, and that the deposit of stone from which a particular lime is made is persistent. Moreover, a method of identification by physical appearance that can be taught the ordinary quarryman must be worked out for each different valuable stone.

In the Allwood case, this was done by means of the fossil remains and physical structure, according to the abundance of the fossil in any particular deposit. The workman was paid a small fee (5c to 50c) for the discovery on breaking up the stone of an identifying fossil. Even the children at the plant of the Allwood quarries can pick out fossils from the waste pile of spalls, and the writer was always careful when going out to the quarry to carry along a pocketful of nickels and dimes and pennies to buy the fossils the children had found, or that the fathers had given to them to be cashed in for candy. But many fossils in the Allwood quarry could be bought for $1.00 in small change, for these stones are not heavy fossiliferous bearing rocks, and only good specimens were purchased, thus teaching the children as well as the men discrimination as to quality. For "Quality" has always been the slogan of the Allwood Lime Co. since the first day it was started.

It was only after three years of research on our first product, Allwood Vienna abrasive lime, that this method, suitable to the quarryman's identification of different stones, was evolved; and as soon as the workman realized that the next blow of the sledge might uncover a "little bug" (as they called them colloquially) worth maybe 50c, the monotony and drudgery was lifted from stone breaking, and the zest of the treasure hunter lightened the labor of the most stolid.

All students recognize that there is through all nature a regular sequence of cause and effect; that all matter is under the control of definite laws which, while evidencing a constant change in matter, never destroy the smallest atom. It is as though a Supreme Intelligence was guiding these alterations of matter from one form to another to fit them for the changing uses the evolution and civilization of man requires of the matter of the universe. And the same infinite Power marks with an indelible index every similar substance, in many cases using part of the original substance that is undergoing the changes to guide the seeker to positive identification. It is man's ignorance and blindness, as it were, that makes the task so difficult.

However, whether this theory be true or false, the writer can prove that for more than twenty years the application of this theory has worked out commercially most satisfactorily, and is today fulfilling perfectly the function for which the method was evolved: identification by uneducated labor of identical limestones for the purpose of insuring *quality, uniformity* and *purity* of lime products.

Foreclosure Sale Delayed

Gibsonburg Lime Products Co., Gibsonburg, Ohio: Foreclosure sale under judgments for $68,474 on a first mortgage and $86,493 on a second mortgage was delayed on a plea that the foreclosure proceedings were instituted for the purpose of "freezing out" the minority stockholders.

Ohio Soils Need Lime

A RECENT SURVEY of Ohio soils, based on the analyses of thousands of samples, reveals that over half the acreage of the state has soil too acid to grow clover crops successfully, according to the State Agricultural College and Experiment Station. It is estimated that the 200,000 tons of lining materials now being used annually are less than one-fourth the immediate need to barely maintain the soils at their present unsatisfactory level of reaction.

New Lime Plant

Blaine-Republic Co., Republic, Wash., has reconstructed a lime kiln west of the town and will enter the industry with a plant having a capacity of 175 tons per month. J. M. Frye, Seattle, is sales representative.

Lime Kiln Collapses

Oliver King Sand and Lime Co., Knoxville, Tenn., suffered a peculiar accident at its plant November 23 when a lime kiln under fire suddenly collapsed. No one was injured and the local fire department prevented other damage by fire.

New Plant

Florida Dolomite Co., Sarasota, Fla., recently organized, is building a plant 2½ miles from this city. S. D. Gooch, a chemical engineer, is president of the company.

RIGHT—An industrial sand laboratory—submitted by C. W. Thompson, New Jersey Silica Sand Co., to show how his company is keeping pace with the times (article to follow in later issue)

BELOW—Photographs made by Mrs. Grace M. Evans herself, of 1935 blasts at her Monon Crushed Stone Co. quarry, Monon, Ind.

Prize-Winning "Hints and Helps"

Sand Separating Devices for the Small Plant

By Gustav Fandre,
Wausau, Wis.

HOW to get more sand sizes with limited equipment facilities? This is the problem many plant superintendents are trying to solve.

A lot of coarse sand or "buck shot" escapes the ordinary sand recovery equipment and goes out the waste spout; especially is this true where the plant has a surplus of sand. One problem was to separate the small pebbles or "buck shot" from this waste sand, because we had a market for this product.

The "spinning wheel" shown in the sketch consists of an ordinary ball-bearing bicycle wheel hub, rigged with an oblong mesh screen of circular shape—say, oblong mesh 3/16 in. wide. This mesh, having a larger opening than square mesh, will release the water and waste sand more readily, and the pebbles will be thrown off the rim into the pebble spout opening.

The current of water in the waste flume, or spout, will spin the wheel, which will throw some water, too, but additional water may have to be added to the pebble flume below the wheel to carry the pebbles into the bin below. An appropriate housing is built around the wheel, which is set at an angle with the waste spout to prevent the pebbles shooting over it. The speed of revolution of the wheel will depend on its diameter. It should be enough to throw off the pebbles as it revolves. The housing should give at least 4-in. clearance around the wheel.

Spout No. 2 under the wheel must be built considerably larger to catch the waste water and sand that passes through the wheel, and may have to be extended a foot or so back under Spout No. 1 with a back stop to keep the waste material from spilling over.

Plaster Sand With New Type Screen

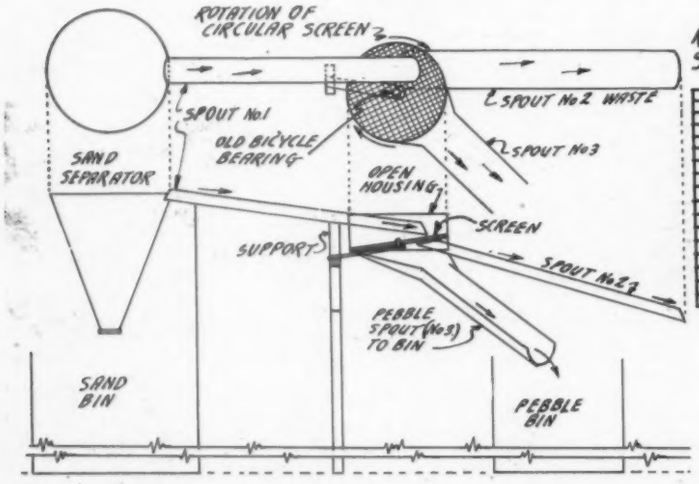
Here is a home-made device to make plaster sand in a cone separator, when only one such separator, or dewaterer, is available.

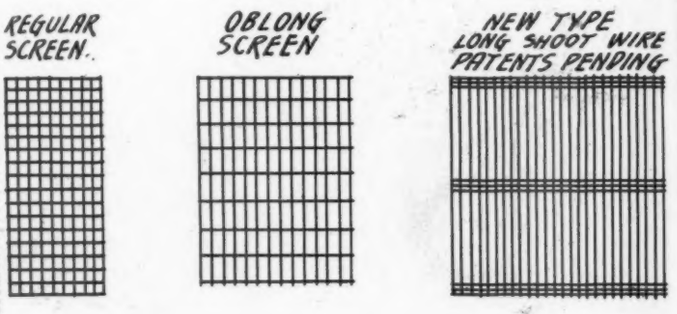
Place a stationary screen right across the top of the sand separator, which acts as a waste spout to carry coarse sand over it into the waste flume. Make this out of "long shoot" wire mesh (a new type for which a patent is pending), because this type mesh will not blind.

When making plaster or mason's sand (fine sand) have a movable spout that can be inserted under the discharge valve of the cone to carry this sand to a separate bin. This spout can be moved out of the way when making ordinary coarse or concrete sand.

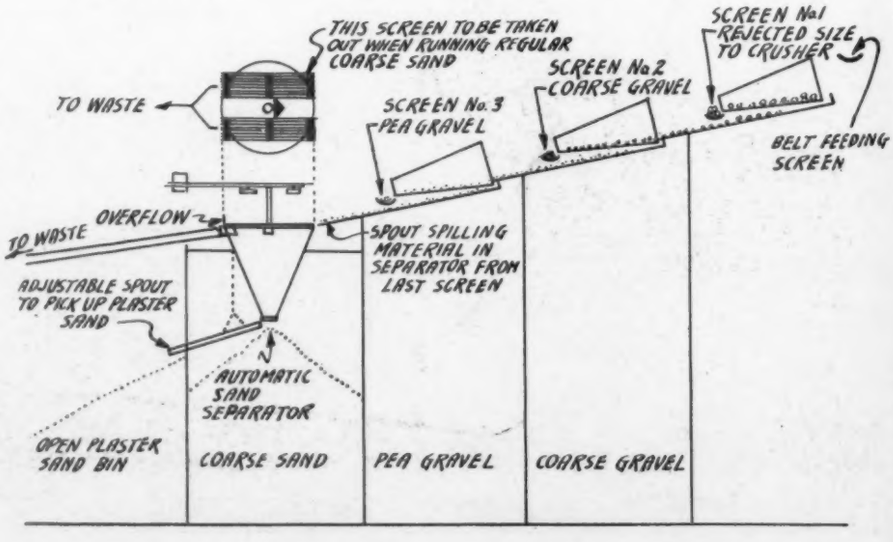
Each plant superintendent will have to make a careful study of the proper mesh required for this screen to bring down into the separator sand of the required fineness. A great deal depends on the speed of the material in the incoming flume. A finer mesh is required than on a revolving screen. The ordinary speed of the water and sand in the flume will not drop through pebbles smaller than the wire mesh. In other words, a mesh that one would think should produce a coarse sand will actually produce much finer sand, because the rapid current will carry the coarser particles over.

Our screen is only 10 in. wide by 40 in.





ABOVE—Types of wire screens tried out
LEFT—"Spinning wheel" for recovering fine gravel
BELOW—Simple method of recovering fine sand


THIS SCREEN TO BE TAKEN OUT WHEN RUNNING REGULAR COARSE SAND
SCREEN No.1 REJECTED SIZE TO CRUSHER
SCREEN No.2 COARSE GRAVEL
SCREEN No.3 PEA GRAVEL
TO WASTE
BELT FEEDING SCREEN
OVERFLOW
TO WASTE
SPOUT SPILLING MATERIAL IN SEPARATOR FROM LAST SCREEN
ADJUSTABLE SPOUT TO PICK UP PLASTER SAND
AUTOMATIC SAND SEPARATOR
OPEN PLASTER SAND BIN
COARSE SAND
PEA GRAVEL
COARSE GRAVEL

Prize-Winning "Hints and Helps"

long, with an opening between wires of ⅛ in.

When the coarse sand bin is filled, the plant can be readily changed over to making plaster or mason's sand, and while making these finer sands the coarser pebbles in the waste flume can be salvaged with the "spinning wheel" described above.

While we have been making plaster sand by this method with square mesh screens for the last ten years, the production was unsatisfactory, getting only 60 to 70 cu. yd. in 10 hours, because of the blinding of the screen. With the new "long shoot" screen mesh we have increased production to 150 cu. yd. per 10 hours. In addition we are producing a very high grade uniform material.

For Revolving Screens

Our practice is to use regular square mesh or round-hole punched plate screens for sizing ⅞-in. or larger material. We have little difficulty from blinding with these sizes. The use of rectangular, or oblong, mesh may result in passing elongated pieces in excess of specification limits.

We use oblong mesh for all gravel smaller than ⅞-in.

We use the new "long shoot" mesh for all sizes smaller than ⅜-in.

The oblong and "long shoot" meshes have the advantage of allowing a slight springing action which aids the screen in freeing itself of wedged particles. I am not acquainted with vibrating screens, so I cannot say whether these elongated meshes are advisable in all instances or not, but I believe in many installations their use would result in greater output.

Prizes Awarded

THE FIVE prize-winning articles on "Hints and Helps" are printed herewith—together with a few samples of the others received. Many more to follow will appear in succeeding issues.

Decisions were difficult because ALL the articles submitted were GOOD. The judges picked those which were considered the most original and of the widest application to this industry.

FIRST ($50)—"Sand Separating Devices for the Small Plant," by Gustav Fandre, Wausau, Wis. Mr. Fandre is superintendent and bookkeeper of the Carl Lotz Sand and Gravel Co., a typical small operation.

SECOND ($40)—"Speeds Truck Dumping," by Clark H. Wright, who is a master mechanic of a New York State plant.

THIRD ($30)—"Sand and Gravel Dredging Cost Savers," by Charles Clowe, superintendent of a typical small dredging operation.

FOURTH ($20)—"Four Simple Ways to Save Cost," by Ernest Moyer, who has been a contributor before.

FIFTH ($10)—"Combined Automatic Control System for Electric Driven Air Compressors," by Robert A. Harker.

The editor extends his congratulations to these authors and his heartfelt thanks to all contributors, who will be paid space rates for their articles within the next few days.

Speeds Truck Dumping

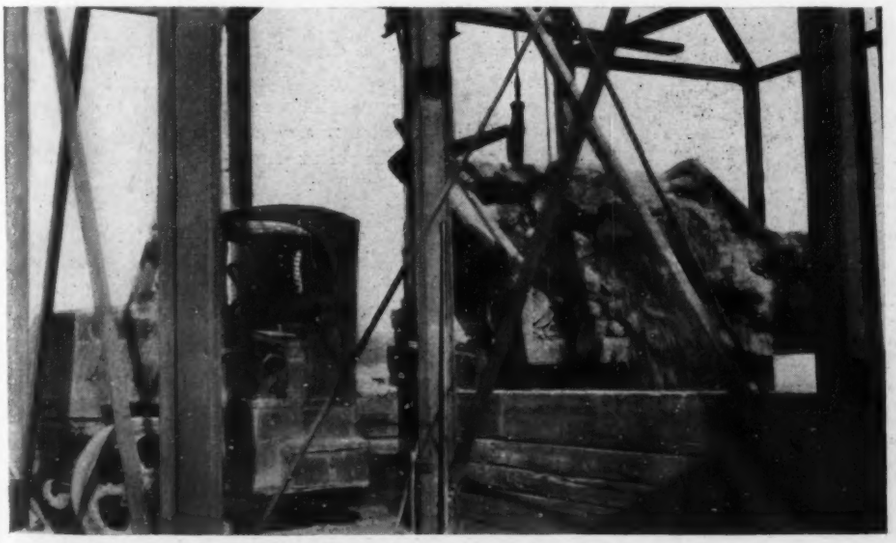
By Clark H. Wright
Snyder, N. Y.

THE two pictures show a side-dump motor truck depositing its contents into a 42-in. Traylor gyratory crusher. Around the top of the crusher is a combing built of 12-in. square timbers, 3 ft. high, bolted together to prevent stone from spilling away from the crusher top.

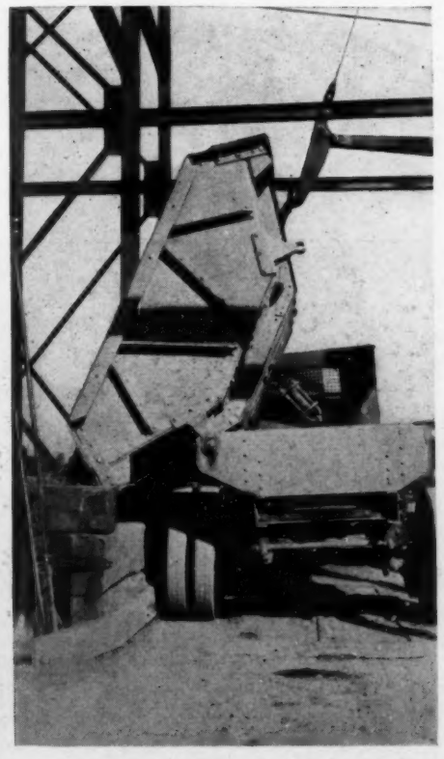
With equipment we installed last winter we can dump a truck load of stone from the quarry in 35 seconds. The device consists of a compressed air cylinder 10x8 in., a ⅜-in. steel cable, two sheaves and an Easton patented hook.

When we first started this operation we ran into quite some difficulty in dumping the trucks, because the truck bodies, or dump boxes, would carry too far and sometimes would unhook the hook from the dump box, allowing it to drop back on the truck chassis, causing unnecessary strain on the trucks.

We figured that the structural part of the trucks was strong enough to carry the dumping strain, but as time went on we found that this strain would bend the I-beams where the dump hook arm was fastened. We



Side-dumping motor truck for hauling stone in quarry



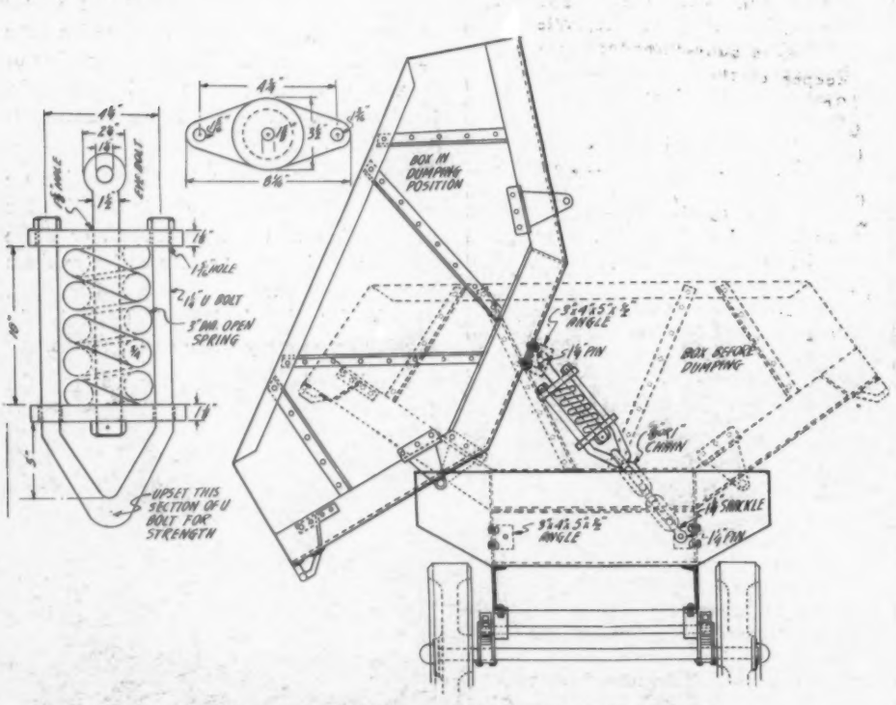
Spring which speeds truck dumping

had to reinforce the I-beams at this point.

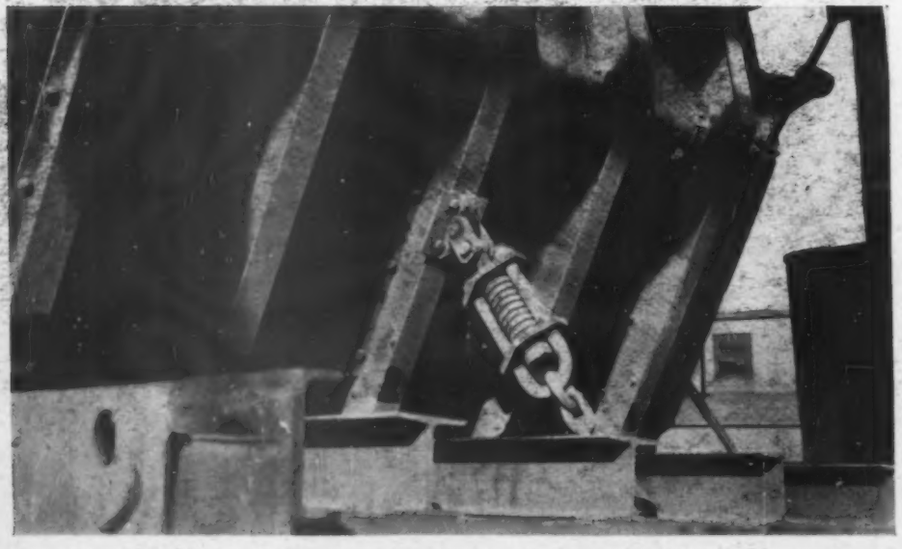
I figured that there must be some way by which the strain could be distributed to the truck unit and eliminate the strain on the structural support of the dumping box. The illustrations show the dmping of the truck and a portion of the dump hook arm and the hook fastened in it, as well as the check spring which I made and installed on all our trucks. It does everything expected of it. When the truck is in loading position the check spring folds under the dump box and does not interfere with any operation of the truck.

If at any time it is necessary to dump the truck box from the opposite side, all that is necessary is to remove a cotter key from the pin that holds the chain on the chassis, by means of a shackle, and fasten the chain to the other side of the chassis. Moving the chain from one side to the other does not interfere with the check spring because it is assembled in a central position on the bottom of the box. We use a ⅞-in. welded link chain.

In the construction of this check spring care should be taken to lay out and drill all holes as true in line as possible so that the eye bolt and U bolt will not bind in the holes in the end plates, as this will prevent good action of the spring and will also cause the eye bolt and U bolt to cut. Also face off the ends of the springs so that they will set square on the end plates; if not, this may cause the spring to bind the eye bolt.



Details of the spring devised by Clark H. Wright



Close-up of the spring attached to body and truck chassis

Sand and Gravel Dredging Cost Savers

By Charles Clowe,
Oxford, Kan.

TO HELP in priming our dredge pump and also to hold the priming for short stops, we installed a foot valve in the suction line. Sand is pumped against a 50-ft. head through a 600-ft., 8-in. line.

Stopping Water-Hammer

Also we put in an 8-in. globe valve in the discharge line to control water-hammer. In stopping the pump we would have to close the valve in the discharge line two-thirds of the way; if done at the right time this would prevent water-hammer, but frequently would tear up the flap in the foot valve. In about four months' time the threads on the 8-in. valve stem were cut out and the valve rendered useless.

As the valves came high and didn't last, I began experimenting to find something cheaper that would last. The top of our pump bowl was tapped out to a 1½-in. hole for priming. I tried a pop valve in this water line, which helped some, but would get sand in it and stick. So I had a 1½-in. throttle valve put in the line in place of the pop valve.

I bolted a slide rod to the throttle lever and ran it to within easy reach of the operator. When he wanted to stop pumping, he just pushed the rod opening the valve, which released a 1½-in. stream of water. This took care of the water-hammer in great shape and at no expense. A pull on the rod closed the valve when starting up again.

The globe valve in the waste pipe should be closed when priming. When the pump is primed and is pumping, this valve is opened and the throttle valve closed, as described. It is necessary to leave the globe valve open only a few seconds. I had one pump, whose shell had worn thin, burst from water-hammer. This throttle valve had three openings, but one with two openings can be used by putting a T in the line and a nipple, and installing the throttle valve on the nipple.

Greasing Pump Bearing

The outer bearing of our pump, although equipped with a roller bearing, to take care of end thrust, would run hot at times. So I drilled four small holes in the end of the bearing, equally spaced top and bottom, and tapped them out to fit stove bolts. Then I took a marshmallow can, cut the hole out in the top so it would clear the pump shaft by ¼ in.; holes were punched in it to fit the holes drilled in the bearing. Then I cut a hole in the side of the can, so it would be on top (about 6x5 in.), took plyers and turned over the edges at the cut ½ in., and cut a strip from another can to make a sliding cover for the hole.

Taking off the end thrust collar of the roller bearing from the pump shaft, I bolted the can to the bearing end with stove bolts. Then through the hole in the can I replaced the roller bearing end, thrust collar. After

tightening all securely I filled the can about half full with hard oil. Now I forget about it for a year at a time. No more hot bearings. The roller bearing is running in oil all the time, and the oil reaches the bearing itself.

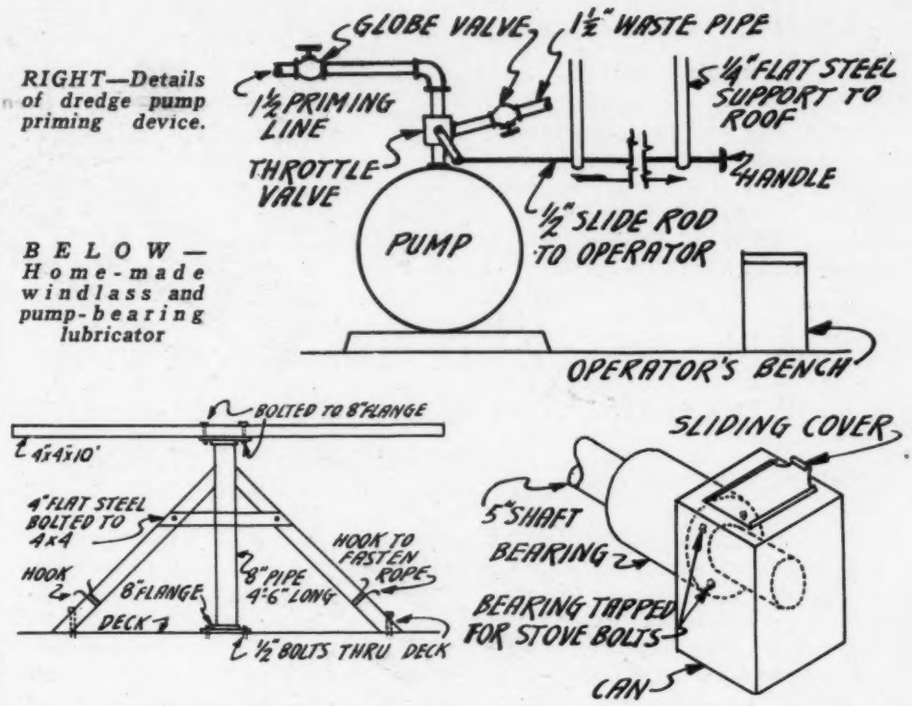
Home-Made Capstan

In handling a long pipe line from a river dredge, we must have it well tied—one head line to the bank and one side rope in the front end of the dredge. The rear end of the dredge had to have a rope from each side to a stationary object and also a rope out from the back to something solid. These lines had to be kept tight; and the way the wind blows in Kansas, it was some job pulling them tight by hand. With a couple of rubber dredging sleeves in the discharge line, we had a chance to swing the rear end 25 or 30 ft., but could not pull the dredge hull by hand against the wind. It was hard on the hands, and tempers, too.

So I built an inexpensive capstan, out of scraps lying about; and with this capstan two men can swing the dredge as far as it will go, in a gale; most of the time one man can do it. I took a worn-out 8-in. pipe flange and chipped out all of the remaining threads with a chisel, so it would turn freely on an 8-in. pipe. This I bolted securely to the deck in the center of the rear of the dredge. I next took a piece of 8-in. pipe 4 ft. 6 in. long, with a flange attached, and set this in the flange previously bolted to the deck. Then I bolted a 10-ft., 4x4-in., bar to the flange on top of the pipe. Four pieces of the 4x4-in. bar., 3 ft. 6 in. long, cut to fit the deck at the bottom, were arranged as braces. They were spiked to the deck. They were tied together below their bearing on the pipe by a flat piece of steel shaped to enclose all four braces, or legs. The bearings, of course, should be well greased.

RIGHT—Details of dredge pump priming device.

BELOW—Home-made windlass and pump-bearing lubricator



Four Simple Ways To Save Cost

By Ernest Moyer,

Superintendent, Renshaw Sand, Rock & Gravel Co., Alturas, Calif.

NECESSITY is the mother of invention and during the past two or three years many a superintendent has had to turn inventor, so here's my contribution:

Thread Cleaner

Our elevator take-ups are the old style kind where the adjusting bolt turns in a fixed nut. At times rock dust and rust have made these bolts difficult to turn. We found that penetrating oil and one-half of an old bolt die, set in a pocket in a hardwood lever, clears the threads in a very few minutes. Fig. 1 illustrates the device.

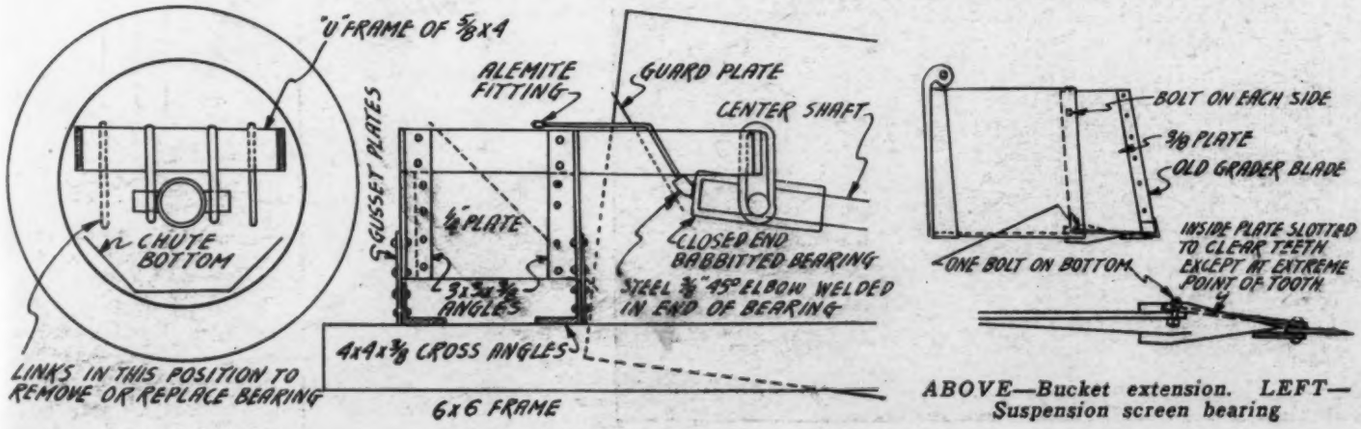
Bucket Extension

For rehandling stocked material with a power shovel a larger bucket was desirable. So we increased our bucket capacity by the simple device illustrated. Two side bolts and one bottom bolt enable the extension to be put on or taken off in a few

LEFT—Thread cleaner.

RIGHT—Portable truck ramp

HALF OF OLD BOLT DIE
TAKE UP BOLT
LEVER
10"x4"x12" PLANKING, SPACED 2 INCHES
60"-16" DIA. STICKS-1 ON EACH SIDE
6"x6" GUARD RAIL-ONE ON EACH SIDE 9' INSIDE TO INSIDE
BUMPER
12"x12" CRIBBING BOLTED
HINGED STEEL APRON
AXLE LENGTHENED TO GIVE WHEELS 8' TREAD
HEAVY STEEL WHEELS FROM OLD PORTABLE CRUSHER
GROUND LINE



ABOVE—Bucket extension. LEFT—Suspension screen bearing

minutes. It has worked out very successfully and the bucket insures a close clean up.

Portable Ramp

We have lowered stock piling costs and lowered reloading costs because of the added height and undisturbed condition of stock piles by using an easily built portable ramp, illustrated in Fig. 3. By folding back the hinged steel apron and backing the truck with body raised against the apron end of the ramp, a tow chain is attached, the truck body lowered and the ramp readily backed or pulled ahead.

Suspension Screen Bearing

We had lots of trouble with the usual bearing bolted under the cross timber on the feed end of a spider type cylindrical, rotary screen. Room for the feed chute was cramped and grit could not be kept out of the bearing. A closed end bearing 12 in. long was installed as the illustration shows, and it has proved entirely satisfactory. We changed to closed end bearings everywhere possible, for with this type no lubrication difficulty is found.

The chute is not shown in the diagram; it is sectional and can be lifted out of the way if necessary. To install or remove the bearing the screen is slightly raised and the links slipped out of the notches on the V-frame and off the lugs on the bearing.

Combined Automatic Control System for Electric Driven Air Compressors Giving Continuous or Intermittent Operation

By Robert A. Harker,

Plant Superintendent, Calrock Asphalt Co., Santa Cruz, Calif.

A SHORT TIME after we had installed a single-stage, double-acting stationary compressor with electric drive, we found that the automatic control system (which stopped the electric motor when the pressure reached maximum and started at minimum) when using two jackhammers would cause frequent starts and stops which consequently caused the motor to heat up as well as resulting in a high power loss.

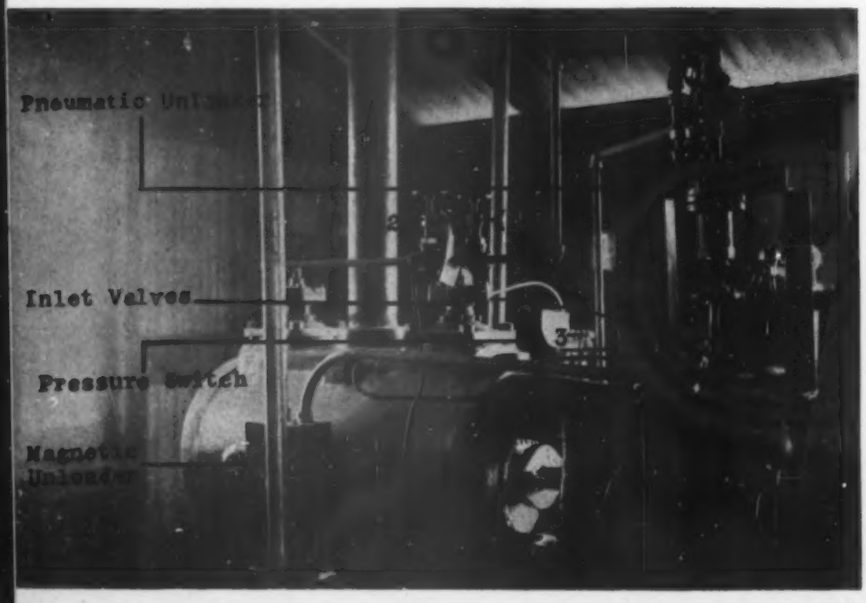
In order to eliminate this trouble it was decided to try out a regular auto-pneumatic unloader of the type used on the conventional gasoline-driven compressors, in conjunction with the original unloader. We had one on hand (Chicago Pneumatic). This type of unloader is designed for continuous running and holds the compressor inlet valves open with receiver pressure when the pressure reaches the maximum at which the spring tension is set.

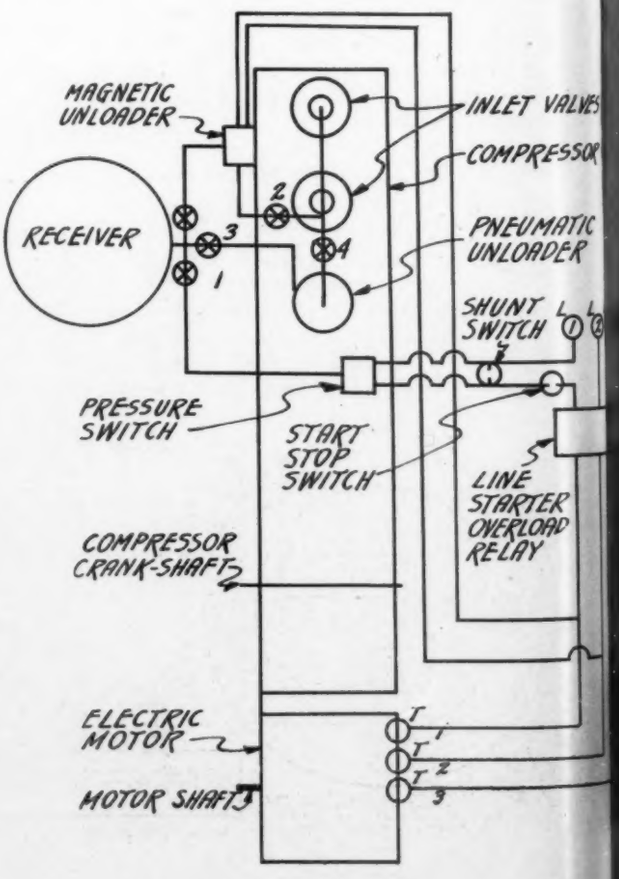
In order to install the auto-pneumatic unloader in conjunction with the existing magnetic system it was necessary to install a system of air valves so that the air could be directed to the required unloader. Also an additional switch was required to shunt the magnetic system in or out. The diagram as well as the photograph shows both systems.

When operating with one jackhammer we found it satisfactory to use the original intermittent system. To operate in this manner the shunt switch is left open. The pneumatic unloader is by-passed off by closing valves (3) and (4). The pressure switch and magnetic unloader are thrown in by opening valves (1) and (2).

With this arrangement by closing the start switch button, the line starter engages and the motor runs the compressor until the maximum pressure is reached, as determined by the adjustment of the pressure switch. The pressure switch then trips, opening the line starter, which stops the motor as well as releasing the magnetic unloader that holds the intake valves open with the receiver pressure, until the next start. When the pressure in the receiver drops to the minimum setting, then the pressure switch closes and the line starter engages, at the same time closing the magnetic unloader that releases the intake valves; and the cycle continues to repeat as above.

When it is desired to operate continuously, the valves (1) and (2) are closed and (3) and (4) are opened. The pressure switch is shunted off by closing the shunt switch and the starter switch, but the button is closed. The compressor now pumps up to the maxi-





Device for combined automatic control system for electric driven air compressors, giving continuous or intermittent operation

mum pressure, as determined by the spring tension adjustment on the pneumatic unloader, then this unloader lifts the intake valves by allowing the receiver pressure to depress the diaphragms; this allows the compressor to run idle, pumping against the atmospheric pressure only. When the pressure in the receiver drops below the minimum setting, then the pneumatic unloader releases the intake valves and the compressor pumps up again, continuing the cycle as above.

The continuous operation, under our conditions is satisfactory when using two or more jackhammers. This eliminates the heating up of the motor due to too frequent starting intervals and also reduces the starting power loss.

This double control system is only of value under certain conditions and in certain installations where there is an electric drive and where the variation in air consumption would warrant both systems.

This installation is on a Gardner-Denver, double-acting, single-stage, single-cylinder, horizontal stationary compressor of 210 cu. ft. per min. displacement. The line starter is an Industrial Controller Co. unit. The pressure switch is manufactured by the General Electric Co. The pneumatic unloader is manufactured by the Chicago Pneumatic Tool Co. The drive is by Dayton "Cog-Belt," over grooved sheaves and the motor is a General Electric 3-phase, 440-volt, 40-h.p. All of this equipment is new and was installed in 1934.

Quarry Drill-Hole Bailer

By E. W. Faylor,
Superintendent, White Haven Quarry, General Crushed Stone Co.

THE TOP of our quarry is very uneven. We do our drilling before we strip. After stripping was completed, we had difficulty in bailing out well-drill holes which always contain considerable water.

We now use a Marion No. 21 gas-electric shovel with a 40-ft. crane boom. By using one cable for a bailer and the other cable for a well-drill stem to open holes that are blocked and stir up the sediment in the bottom of the holes, we solved our problem.

With this outfit we can keep the shovel back of the section that has not been stripped and reach three or four holes in one move. This machine is also used for stripping, and is therefore handy for the bailing job.

Keep It Up

SUPERINTENDENTS and Operating Men: The editor hopes you will all approve these awards. Many of you have contributed for the first time. Now that you have broken into print, rest assured your contributions and any like them will always be welcome.

Photoelectric Cell to Control Feed

(Anonymous)

THE FEED from the 3600-lb. loading hopper into a four-roll, air-separator mill is controlled by a photo-electric cell in a modern Ohio stone plant. A small steel cabinet mounted on the plant wall contains the "electric eye" and a glass U-tube. The glass tube is so mounted in the cabinet that the right-hand leg passes through the beam of light when turned on. The left leg of the tube is twisted out so that it is forward and not in the same vertical plane as the right one and will not cross the beam.

The U-tube is under vacuum, and measures the difference in vacuum between the top or discharge side of mill and the bottom or feed side. An overfeed blocks the inlet ports at the bottom of the mill, causes a rise of vacuum at the top, the dark liquid rises in the U-tube and shuts off the light from the photo-electric eye, throwing in a relay that stops feed till mill readjusts itself.

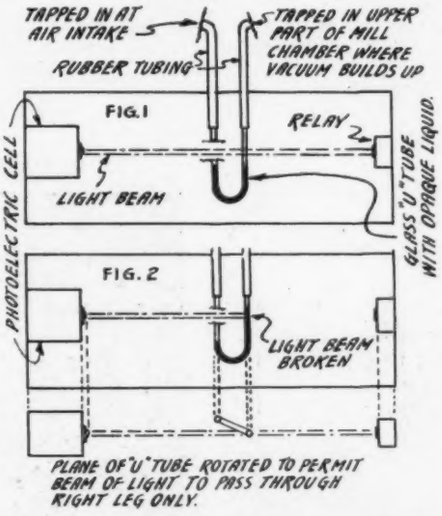

TAPPED IN AT AIR INTAKE
RUBBER TUBING
TAPPED IN UPPER PART OF MILL CHAMBER WHERE VACUUM BUILDS UP
FIG. 1
RELAY
LIGHT BEAM
PHOTOELECTRIC CELL
GLASS "U" TUBE WITH OPAQUE LIQUID
FIG. 2
LIGHT BEAM BROKEN
PLANE OF "U" TUBE ROTATED TO PERMIT BEAM OF LIGHT TO PASS THROUGH RIGHT LEG ONLY.

Photo-electric cell controls mill feed

Crusher Spider Arm Weld

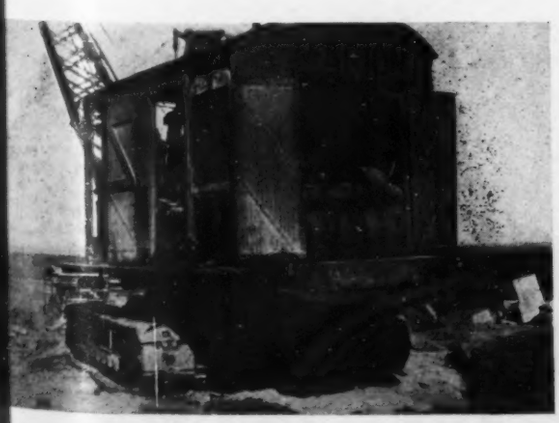
By John C. McGuire
Superintendent, Monon Crushed Stone Co., Monon, Ind.

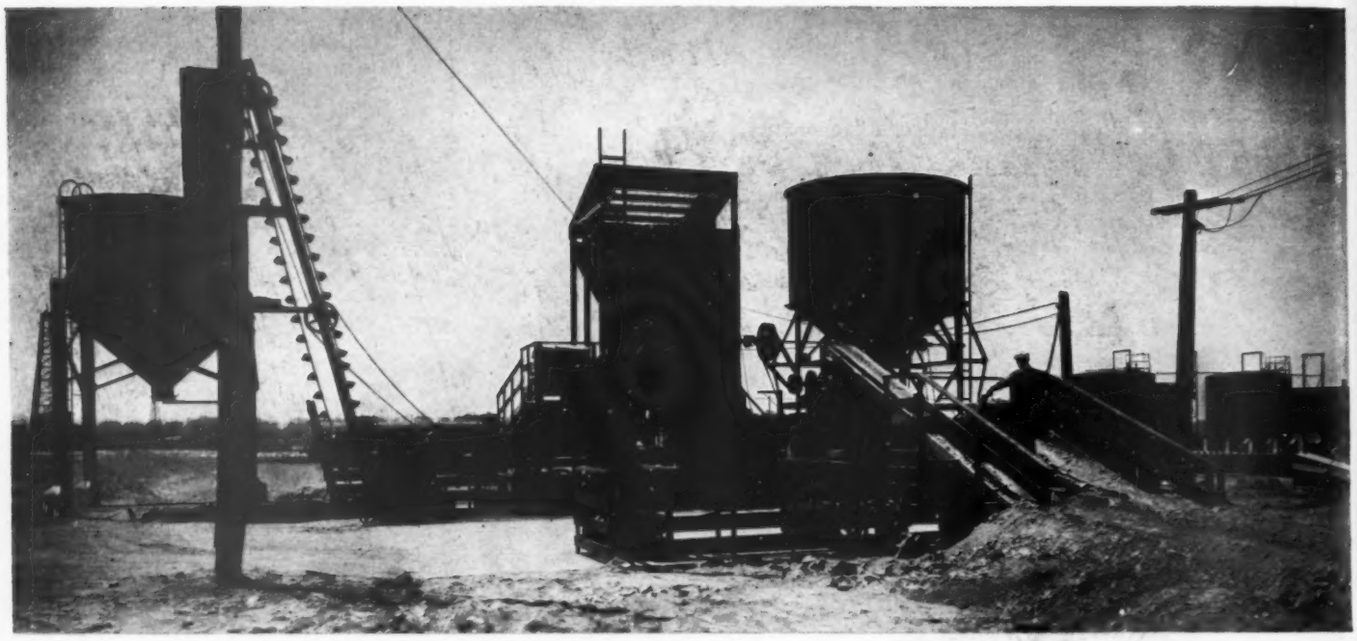
ON August 30, 1935, the spider in our Austin No. 8 crusher broke in two places; one break being in the large cross-arm, which supports the main shaft; the other break being in the outside flange of the spider. A new spider could not be delivered in less than three weeeks, and it was impossible to stop production for that long, therefore we were compelled to make repairs on the old spider.

I have had plenty of experience in welding of all kinds, so we decided on welding the broken parts. The spider is cast iron, and too large for an acetylene weld, so we decided on electric weld. I organized three shifts of two men each, working eight hours each shift. The work required only eight days, and effected a substantial saving over the price of a new spider.

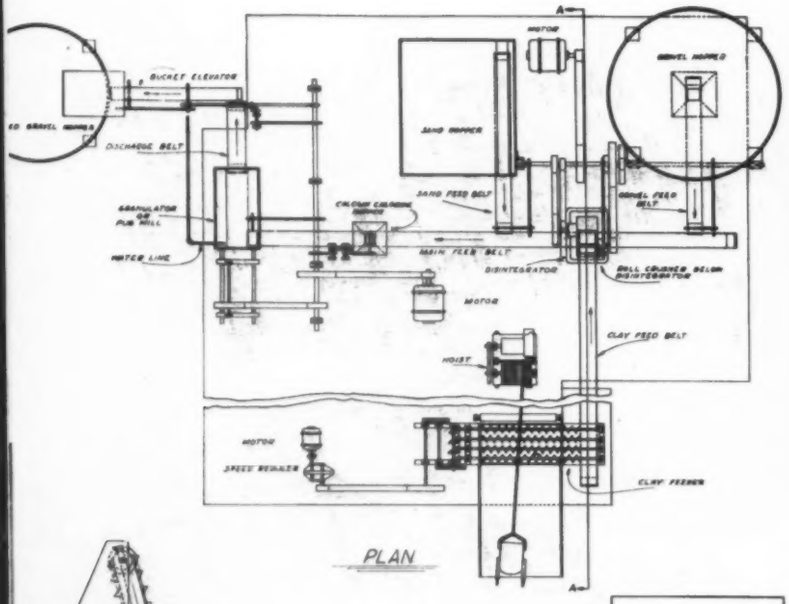
After welding, I reinforced all broken parts with 1¼-in. steel plates, forged to formfit the places on the spider where they were applied. These plates were firmly secured in place with cap screws, as shown in the photograph. Before these plates were fitted and bolted on, the welding was done, making an absolutely rigid job. This crusher has been operated for ninety days since the repair, and the spider has not shown the slightest sign of weakening.

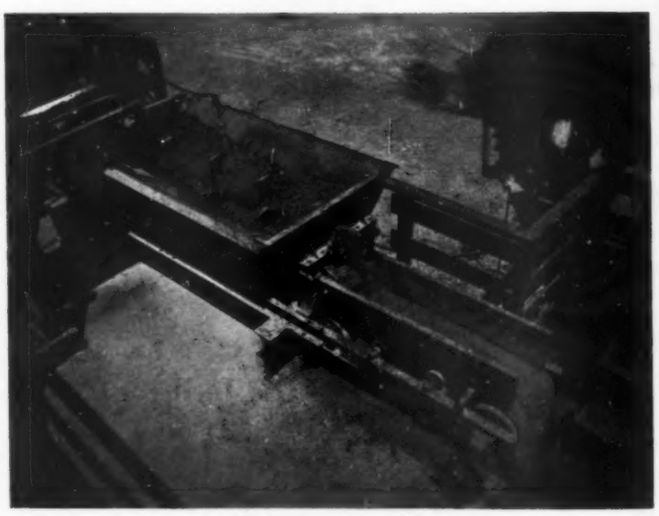
BELOW—Drill-hole bailer: Spider arm weld

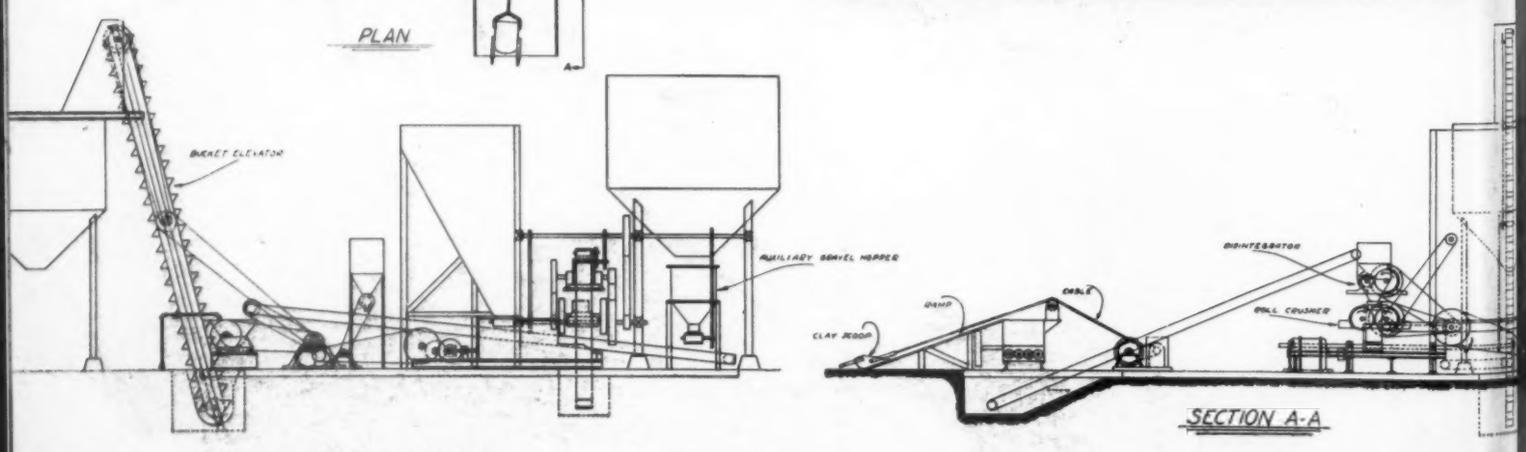


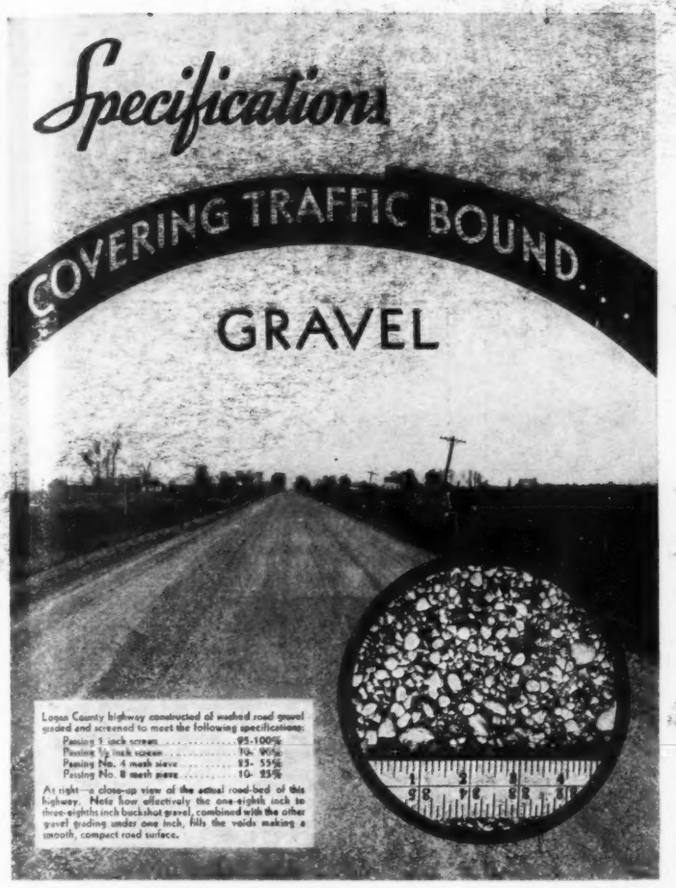


Demonstration plant built by the Dow Chemical Co., Midland, Mich., to determine the suitability of certain equipment for breaking up damp, pit-run clay and for mixing this with calcium chloride, fine and coarse aggregates, to form a stable road-surfacing composition. This is probably the first plant ever designed specifically for this work, and it is expected to be the forerunner of many. The clay is fed to an adjustable four-screw feeder, which breaks it up; it then goes to a disintegrator made of two rolls, one slow, the other high speed, with cutting knives. This discharges to a smooth roll crusher. To this processed clay, calcium chloride and aggregates are added and the whole sent to a pug-mill mixer, with the proper amount of water

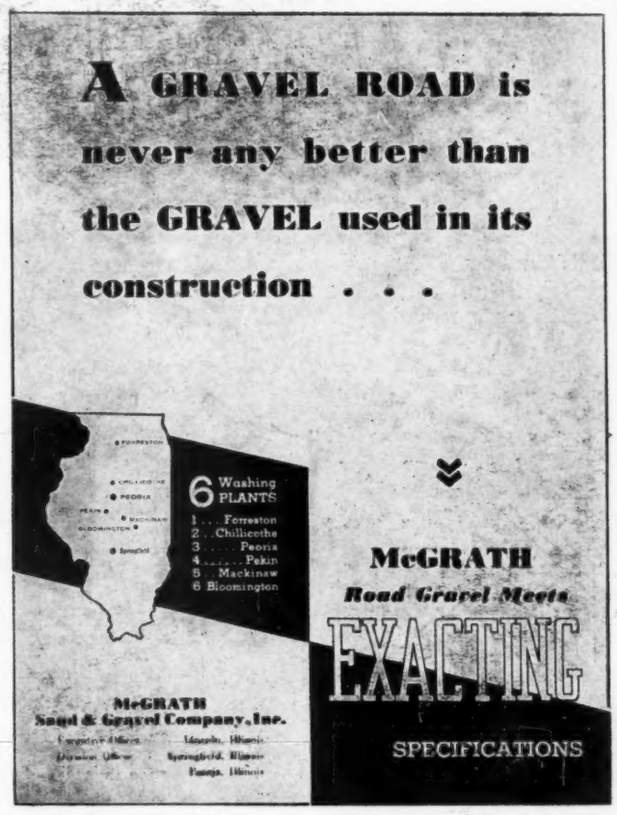






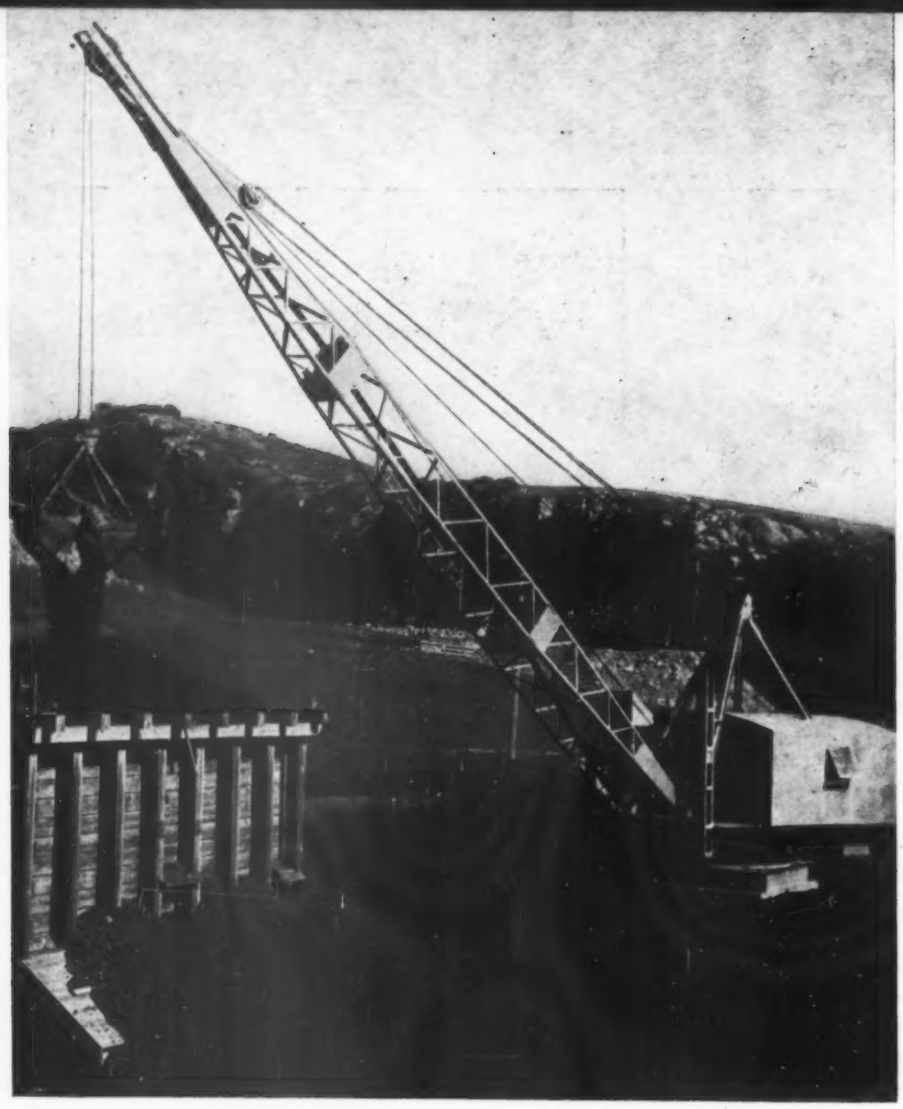

Specifications
COVERING TRAFFIC BOUND...
GRAVEL
Logan County highway constructed of washed road gravel graded and screened to meet the following specifications:
Passing 1 inch screen 95-100%
Passing ½ inch screen 70- 90%
Passing No. 4 mesh sieve 35- 55%
Passing No. 8 mesh sieve 10- 25%
At right—a close-up view of the actual road-bed of this highway. Note how effectively the one-eighth inch to three-eighths inch buckshot gravel, combined with the other gravel grading under one inch, fills the voids making a smooth, compact road surface.

An Illinois producer's answer to local government competition—Front, back and center spread of a red and black circular


A GRAVEL ROAD is never any better than the GRAVEL used in its construction . . .
6 Washing PLANTS
1 . . . Ferreston
2 . . Chillicothe
3 . . . . . Peoria
4 . . . . . Pekin
5 . . Mackinaw
6 Bloomington
McGRATH
Road Gravel Meets
EXACTING
SPECIFICATIONS
McGRATH
Sand & Gravel Company, Inc.

Advertising pays in more ways than one—it promotes "industry-consciousness" on the part of both public officials and the public itself

It takes Properly Graded Gravel to make Good Gravel Roads
Shipped in Road Gravel at Low Prices
Many miles of excellent gravel roads have been built in Illinois with McGrath gravel hauled by Railroads, graded and screened to meet the specifications referred to herein, at an average cost of not more than $1200.00 per mile, and in many cases the cost did not exceed $1100.00 per mile. THESE ROADS ARE BUILT TO LAST!
View No. 1
View No. 2
View No. 3
View No. 4
Gravel Road Specifications
RAILROADS MAKE LOW RATES
AVOID TAX WASTE
MANY COMMUNITIES VOTING BOND ISSUES
SPECIFICATIONS RECOMMENDED



PRIZE PICTURES

THE JUDGES of the prize picture contest have awarded the following prizes:

First ($100): To Irving Warner, Warner Co., for the interesting and instructive picture of his company's new lime putty plant on page 80. (A description of this new plant will appear in an early issue of ROCK PRODUCTS.)

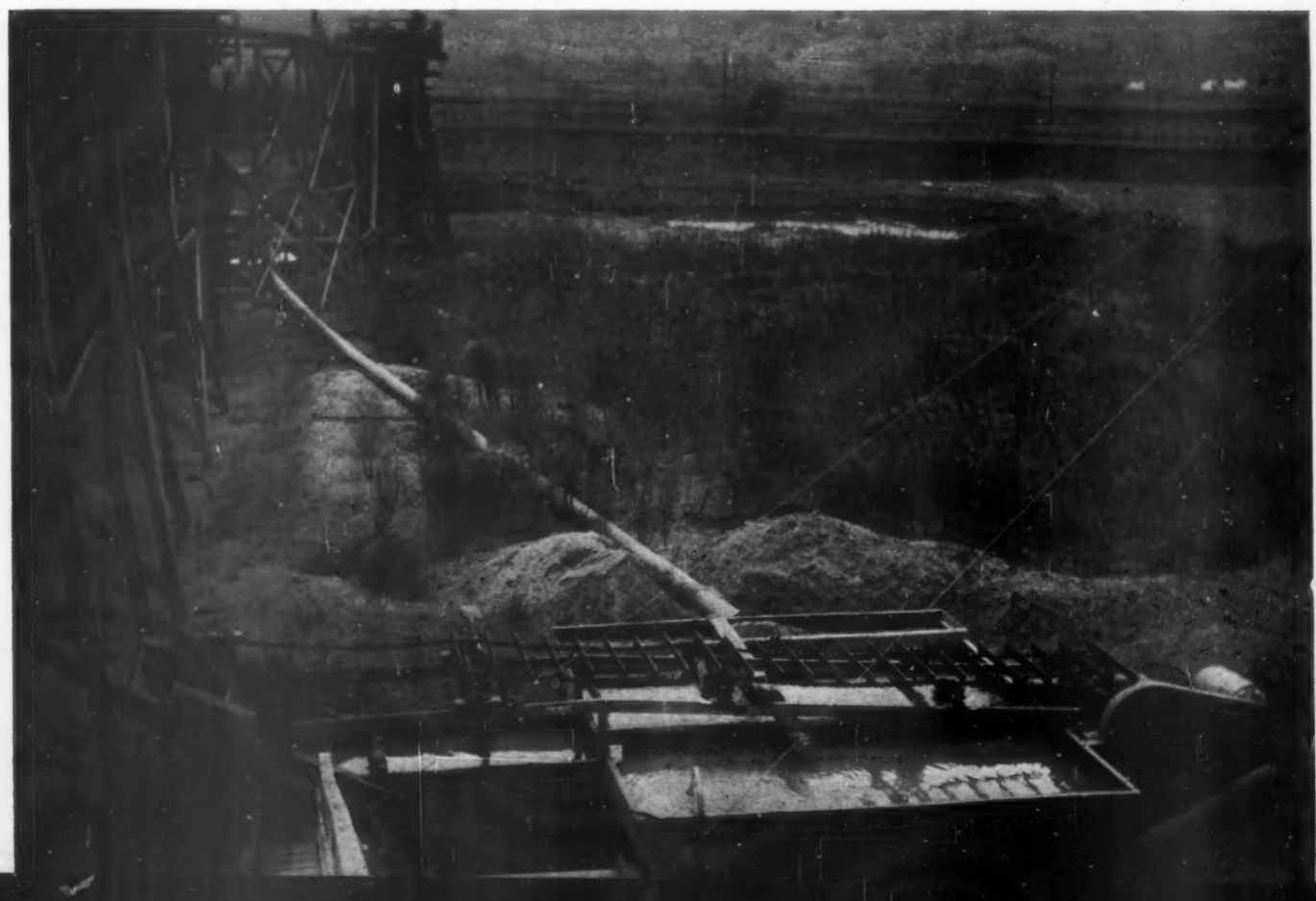
Second ($50): To Miss Martha E. Simons, of the Washington-Idaho Lime Products Co. for the pictures on page 86 of her company's new and novel portland cement plant (a depression product of 1935).

Third ($25): To F. W. Erlin, California Rock and Gravel Co., for the picture on the lower half of this page.

Other pictures submitted in this contest are shown on pages 61 and 89; and there are more which will be used in later issues with descriptive articles.

A Clyde-Wiley "Whirley" with a 1¼-cu. yd. Blaw-Knox "Speedster" clamshell bucket stock piling crushed rock asphalt. It also reclaims into bunker, which feeds to a conveyor belt leading to crushing and screening plant. Submitted by Robert A. Harker, plant superintendent, Calrock Asphalt Co., Santa Cruz, Calif.

Dewatering Link-Belt flight conveyor, 14 ft. wide by 8 ft. deep by 30 ft. long and 6000-gal. settling basin, which handles 1200 to 1400 g.p.m. Through a system of baffles and weirs, an efficiency of 70% has been reached, recovering materials ranging from minus 80- to plus 200-mesh. The average recovery is about 7 tons per hour. The discharge end of the conveyor is fitted with an ingenious device which wipes the flights, conceived by Plant Superintendent J. S. Silva.



Steam required for the gypsum wallboard dryer is made in these boilers, which have been recently equipped with Firite stokers. This is one of numerous improvements made at the company's National City, Mich., plant. An article describing these changes and improvements will appear in a later issue of ROCK PRODUCTS. *They are particularly interesting at this time because they are typical of the plant rehabilitation program that is to follow this year at some of the Universal Gypsum and Lime Co. plants, which were merged with National Gypsum Co. during 1935*

National Gypsum Co., Buffalo, N. Y., Fastest Growing Youngster in the Rock Products Industry, Is Making Improvements, of Which These Are Typical

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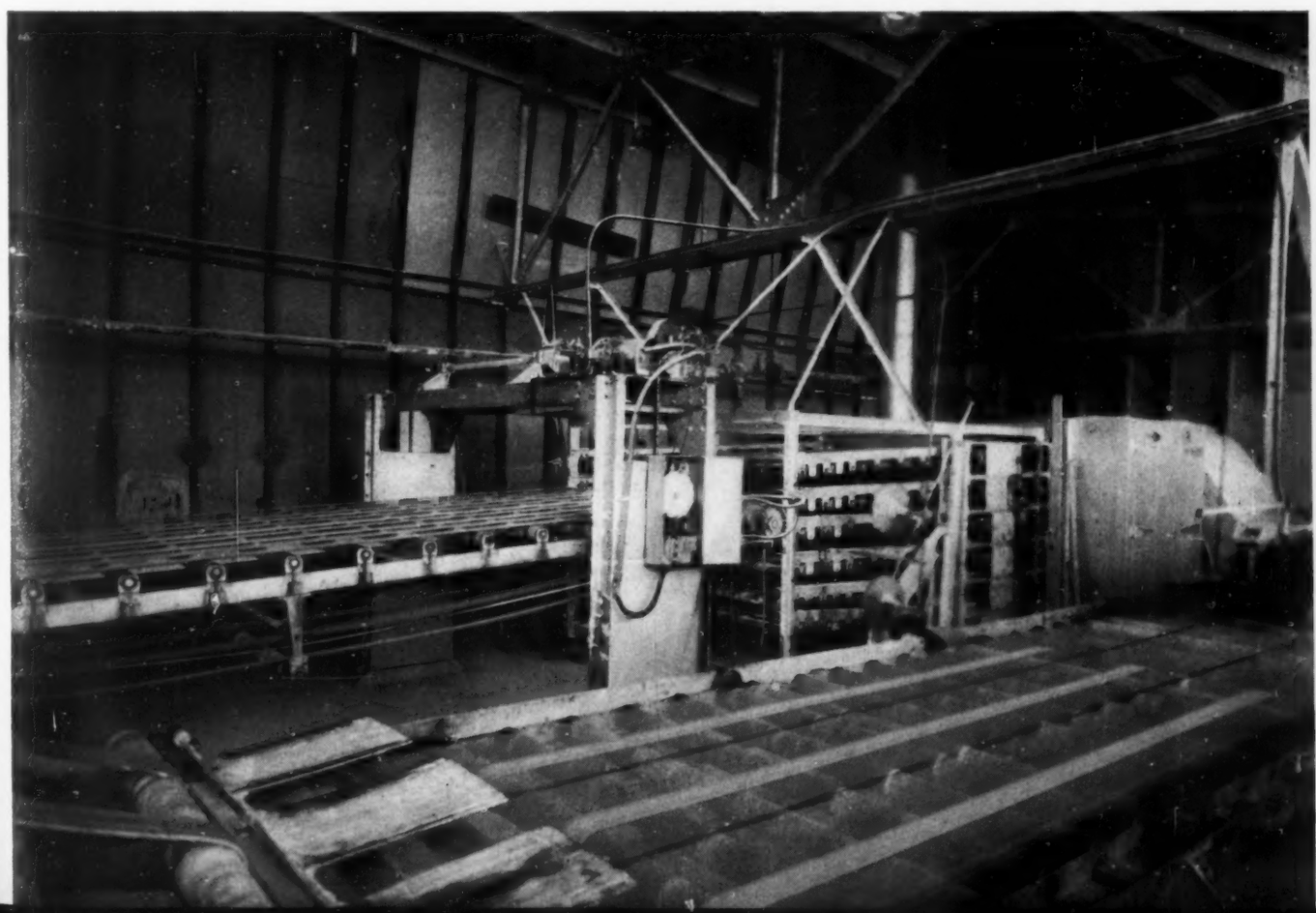
The wallboard machine and dryer were improved to facilitate operation and increase capacity. The incline on the left, in the background, automatically carries board to the various levels of the rack in the background, changing automatically when one tier is full. This rack automatically feeds the board directly in to the end of the dryer to the extreme right. In the foreground at the right are rolls for carrying the board from the mixer table to a turn-table. In the left foreground are plates that are lowered to pick up defective boards, which are lifted to another level and conveyed to a waste pile



Silicosis as a *Racket*

SILICOSIS is a real hazard in some rock products industries and it is receiving, and it will receive, more and more serious attention of producers, insurance carriers and government. Unfortunately for all concerned it has achieved as much attention the last year or two as a racket as it has as a scientific problem. We have no intention of treating so serious a subject as silicosis in a jocular vein; we do wish to help producers in their fight against it in every way, and that includes a fight on the racket.

So we reprint here, verbatim, the testimony in a recent case in St. Louis, Mo., where disbarment proceedings are in progress against several lawyers who have profited by questionable methods. The report is taken from the *St. Louis Post-Dispatch*, but the illustrations are our own. We hope, by giving such prominence to these facts, to dissuade lawyers of similar talents from bringing suits against other producers in our industries. Also we want to put producers on their guard against this kind of chicanery.

Enter Tim Hardin

Tim Hardin, Negro living near Kirkwood, Mo., was the first of the silicosis case plaintiffs to be called as witness. He said he worked for the Tavern Rock Sand Co. for 28 years before leaving the company's employ in 1923, and that he had a "little case" against the company, but that his lawyer died and the case was dropped. It was after this, he said, that he was persuaded to engage Hullverson as his attorney in a damage suit charging injuries from silicosis.

In the course of his testimony he described himself as an employe of Hullverson, engaged in finding clients for the lawyer, and described his activities in detail.

He said Jesse Adams and Robert Poe called on him in 1932 or early in 1933, and told him that Hullverson would be a good lawyer to take up his case, and would get him some money. Poe, as testified before, was a non-lawyer office associate of Hullverson; Adams is one of those named, in the Bar Committee's complaint, as a runner employed to bring suits into the office.

Tells of Signing Contract

The witness said Poe persuaded him to sign a contract, which he did not read, and that he was then taken to Hullverson's office. There his statement was taken by Dan Corcoran, another non-lawyer employe of the office. He said Hullverson at first expressed lack of interest in his case, saying, "You know how those darkies did me before," but that Poe insisted that his case was all right.

He said he was taken to the office of Dr. Edward W. Morish together with another prospective client, and that after an examination Poe and the physician talked together, and he saw the physician shake his head. Poe, he said, then remarked to him, "Some of you fellows are in an awful bad fix."

"Did anyone say who would pay the doctor's bill?" Hardin was asked. He said

nothing was said as to this, and that he paid nothing, and received no bill for this or subsequent examinations and medicine furnished to him.

One of the Bar Committee's charges of unprofessional and unethical conduct against Hullverson is that he, in soliciting business, agreed to pay costs of medical examinations and services for his clients.

At Hullverson's office, the witness said, he was told he had a good case. He told of later visits to the lawyer and the physician, and said he saw on Poe's table, under a glass top, a list of 200 to 300 cases, with notations, "Type 1," "Type 2," "Type 3" or "n. g." He said Poe told him Type 3 were those who "weren't here for long," Type 2 those not so bad, and Type 1 those in fair condition; Hardin said he was listed in Type 3. The "n. g." meant no good.

Later, the witness said, he "sold out," by compromising his case for $1,000, and stayed away from Hullverson's office, thinking the lawyer was angry with him; but he said Poe stopped him on the street one day, and asked him to visit the office again, saying Hullverson was not angry. He said he went reluctantly, and found Hullverson agreeable.

Hired as a "Sample"

"Hullverson told me he would have my case set aside, that there was more money coming to me," the witness testified. "He said to go ahead and use what I had. He said, 'You're working for me now; your pay starts today at $25 a week, and this is your boss—Mr. Poe. I'm going to send you around, as a sample of not to sell out."

Hardin told then of trips with Poe into nearby counties where he was acquainted with workers in cement, gravel and other industrial plants. "We went around and solicited cases," he said. "We'd bring 'em in and take 'em back. I worked on it close to three months."

Asked how he selected the persons to see, Hardin answered, "Sometimes peeople would come to see us when the word got around, and sometimes we would go riding and look for them."

On one such trip, he said, they encountered a Negro about 70 years old who was carrying water for a road construction gang, and on inquiry learned that he had worked for a cement company for "18 or 22 years," until 12 or 15 years before. Poe asked this man if he was short of breath and signed him to one of Hullverson's contracts.

He told of four Negroes whom they met on the road near Labadie, Mo., and signed to contracts. Poe told one of them, he said, "This means money. There's more due you, and every man who worked in those places." He said Poe told one of the four, who had worked for only six months at the plant, to "make it a year."

Asked if he knew Jim Ellis and Walter Evans, Hardin answered: "Yes, those were two cases I turned down. The cases were old, way back about the World's Fair time, but somebody else came along and got them." He said, in response to a question, that he

did not know whether the "somebody else" was Poe.

A "Silicosis Farm"

A "silicosis farm" on the Meramec River in St. Louis County, where Negro plaintiffs in damage suits were kept while their cases were pending, was the subject of questioning of Hullverson.

Frank Hollingsworth, counsel for the Bar Committee of the Eighth (St. Louis) Judicial Circuit, which is complainant in the suit, sought to show that Hullverson colonized his clients, who were residents of Franklin County, in St. Louis County, in order that their suits might be filed in St. Louis County. Hullverson denied that he had sought to establish a residence in St. Louis County for the men, who were former employes of mills and quarries around Pacific, but he said the suits were filed "in St. Louis," though he appeared to mean St. Louis County.

The men staying on the farm were plaintiffs in damage suits in which injury from silicosis, an occupational lung disease, was alleged. But Hullverson, when asked about this "silicosis farm," said it was merely a resort owned by him. He said there were 18 cottages on the 35-acre place, which he had owned since 1923. It was called Bald Pate.

Paid Them $1 a Day

"And you kept a large number of your silicosis clients there?" "I wouldn't call it keeping them. They worked there. I paid them $1 a day and furnished them about 15 gallons of stew for lunch; no breakfast. I never had more than 13 there. It was purely to try to hold them along, so the companies wouldn't try to take advantage of them."

"You alleged total disability for these men?" "Yes, those were the fellows who picked up leaves."

"And you had these men, residents of Franklin County, claim residence at the farm in St. Louis County?" "I did not—the suits were filed before they went to work for me at Bald Pate."

Hullverson, asked how the expenses of the resort were carried, said he carried them as business expenses, but that the Government income tax authorities refused to allow the claim of business expenses. Later, he said, he carried them as "part of my general business, not my law business."

50-50 Contracts

Further questioning of Hullverson brought out that he paid medical expenses and court costs and that his profits were derived by a 50-50 split with his clients on whatever damages could be wrung from producers.

Saves Fellow Workman From Suffocation in Sand Bin

AN ACT of heroism on the part of a fellow workman, together with the timely use of an oxy-acetylene cutting torch by another, saved J. C. Jordan, Booneville, Ore., from certain death by suffocation, when he fell into a sand bin and was buried alive, as the bin was being filled with sand. Elmer Seigfreed, a fellow worker, burrowed his way through the sand to Jordan's face and then cupped his hands over the man's nose, thus keeping back the sand and affording the victim breathing space until a welder could cut holes in the bottom of the steel bin with a torch, allowing the sand to flow out. Seigfreed experienced almost as much difficulty in breathing during the ordeal as did Jordan, it was stated. Both men were rushed to an emergency hospital for treatment, where they soon recovered. The accident occurred on a large dam construction job near Booneville.

Elects New Officers

Gypsum Association, Chicago, Ill., held its annual meeting in December and elected the following officers: President, John C. Best, president Best Bros. Keene's Cement Co., Medicine Lodge, Kan.; first vice-president, L. I. Neale; second vice-president, C. O. Brown; treasurer, A. J. Campbell; secretary, H. J. Schweim. Directors elected were M. H. Baker, J. C. Best, A. R. Black, C. O. Brown, A. J. Campbell, T. P. Eldred, S. M. Gloyd, R. B. Henderson, C. F. Henning, S. J. Kelley, James Leenhouts and L. I. Neale.

Analysis of Highway Building Traces Effects on Employment

THE FAR-REACHING EFFECT of highway construction in creating employment directly on the road and in many industries is shown in a publication entitled "An Economic and Statistical Analysis of Highway Construction Expenditures" issued by the Bureau of Public Roads of the U. S. Department of Agriculture.

An expenditure of $100,000,000 for highways initiates a movement, analysis shows, resulting in the transaction of business to the extent of $315,000,000 and causing the employment of 103,000 men for one year.

Highway construction may be managed to provide employment in rural and urban areas approximately in proportion to unemployment in the respective areas, says the Bureau. The variety of highway types and degrees of mechanization make possible considerable adjustment to meet employment needs. Although highway construction has the conspicuous advantage of flexibility in creating employment where there is the greatest need, it also produces substantial employment in many industries.

An expenditure of $100,000,000 for highways is analyzed. The expenditure is assumed to be made for highways of the types, in the locations, and under the conditions of expenditures in recent years. The direct employment on the road is shown and also the first distribution of funds to various industries. These expenditures generate still other expenditures through the purchase of materials, equipment and supplies. The report traces, step by step, the industrial activity and employment in 23 basic industries involved in handling and processing highway materials and supplies. These materials and supplies originate in quarries, mines, forests, and fields and pass through many hands before finally used in a finished highway.

The report should be of interest, the bureau believes, to those concerned with unemployment problems and with the formulation of highway policies. It will also be useful to business interests in showing the amount of business derived from highway work.

Copies of the report are available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., for 15 cents each.

Sand and Gravel Association Plans a "Do Something" Meeting

ALL SAND AND GRAVEL PRODUCERS, and those who have an interest in the industry, are cordially invited to attend the 20th Annual Convention at the Jefferson Hotel, St. Louis, Mo., beginning January 27, 1936. The annual gathering of the industry will be one of extraordinary importance this year. The meeting has been aptly styled "The Congress of the Industry," and it will be that in more than name. It is expected to register its viewpoint toward the many bills already enacted by Congress and those which are awaiting consideration in the new Congress. To a degree never before experienced, the voice of industry is having its influence in the shaping of major legislative policies. There is a danger that the law-making bodies will unbalance industry and aggravate rather than cure unemployment through legislative devices designed to accomplish the opposite objective. It is the job of industry to advise and to counsel with those who frame our laws.

Abstract of Program

Monday, January 27: The Board of Directors of the National Sand and Gravel Association will meet. At 5:30 p. m., in the Gold Room of the Hotel Jefferson, there will be an informal reception and buffet supper under the auspices of the Manufacturers Divisions of the Association and the National Crushed Stone Association. At 7:30 p. m., the Joint Exposition of these two divisions will be formally opened. All available space has been reserved by leading manufacturers of machinery and equipment used in the sand and gravel, crushed stone, and allied fields.

Tuesday, January 28: At 9:30 a. m., the Twentieth Annual Convention of the National Sand and Gravel Association will open with an address by the president, who will be followed by the executive officers of the Association. There will then be an open forum on business conditions in the sand and gravel industry, in which will participate producers representing every part of the United States and the Province of Ontario. They will answer a selected list of questions whose purpose is to determine definitely the sand and gravel situation in 1935 and the prospect for 1936.

There will be a luncheon at 2:30 p. m., under the auspices of the Manufacturers Divisions of the National Sand and Gravel Association and the National Crushed Stone Association. No formal convention sessions will be held on Tuesday afternoon, this time being set aside for further inspection of the Joint Exposition.

Wednesday, January 29: The program on this day will be under the auspices of the Mineral Aggregates Institute, of which the National Sand and Gravel Association is a member, together with the National Crushed Stone Association and the National Slag Association. The Institute is the agency through which these three organizations discuss and act upon common problems, and the program for this day is expressive of that purpose. The presiding officer will be Otho M. Graves, chairman of the Institute, and the program will open at 9:30 a. m., and conclude at 5:30 p. m. The speakers will be: Col. H. B. Hackett, assistant administrator, Federal Emergency Administration of Public Works, "The Function of Federal Public Works in the Stimulation of Industrial Recovery"; Col. Lawrence Westbrook, assistant administrator, Works Progress Administration, "Construction Program of the Works Progress Administration"; Abram F. Myers, member of the Washington Bar, "The Future of Industrial Coöperation Under Government Auspices"; John C. Gall, associate counsel of the National Association of Manufacturers, "The Significance of Social Security and Labor Legislation"; Col. Willard T. Chevalier, vice-president, McGraw-Hill Publishing Co., "The Responsibilities of Industry in the Revival of Construction" (tentative); Robt. J. Potts, chairman, Committee on Resolutions. Particular attention is directed to the report of this committee, for it will have an important bearing upon the policy of the industries in the future.

On Wednesday evening at 7:30 p. m., there will be a dinner-dance in the Gold Room of the Hotel Jefferson under the joint auspices of the National Sand and Gravel Association, the National Crushed Stone Association, and the National Slag Association. A program of delightful entertainment has been arranged, and an orchestra will provide music for dancing. We hope that the ladies of the sand and gravel industry will be at St. Louis, for, in addition to the entertainment on Wednesday evening, there will be a special program which will engage their interest on Tuesday, Wednesday, and Thursday.

Thursday, January 30: The National Sand and Gravel Association will return to its independent sessions. Among the questions of every-day importance to the sand and gravel industry which will be discussed at that time are the following: Standardization of Sizes and Gradings of Sand and Gravel for Road Mixed Bituminous Surfaces; Problems involved in furnishing sand and gravel for two of the largest contracts in the history of the industry—the Fort Peck Dam and the Tygart River Dam; a Symposium on Trends in Specifications as They Affect Plant Operation, including a discussion of Compliance with Soundness Tests, the Elimination of Soft Particles, and Compliance with Grading Specifications.

On Thursday afternoon, Nathan C. Rockwood, editor of Rock Products, will discuss "The Functions of a National Trade Association." He will be followed by others who will discuss Trends in Federal Legislation, Accounting Records Required by Social Security Laws, and Occupational Diseases under Compensation Insurance Laws. The report of the Board of Directors and the installation of new officers will close the convention.

Lime Association Loses Services of Outstanding Leader

NORMAN G. HOUGH has resigned as president and general manager of the National Lime Association, effective January 15, 1936. In his announcement to the members of the association, Mr. Hough said:

"To you who have rendered such splendid support to the association during the past seven and a half years, I want to express my deep thanks and appreciation. You have been loyal through a period when support of the association was a real sacrifice, and your steadfastness has been an inspiration to myself and my associates here. Your coöperation has meant the fulfillment of a number of important objectives thus far, and as a consequence we stand today closer to the mutual goal of a greater and better industry than ever before.

"I want to assure you that in my new work I intend to give full support to the association, and as much of my time will be available as may be necessary to ensure no cessation of the important coöperative work now under way. The association will continue to move forward and all our mutual problems will receive the same serious consideration and action as in the past."

In an accompanying announcement, S. Walter Stauffer, chairman of the board of directors, said:

"Mr. Hough came to us when we were at a very low ebb and through conscientious and diligent work has built it up to its present position. * * * He is leaving everything in fine shape and, since he is remaining in the industry, will be available for consultation and advice at all times."

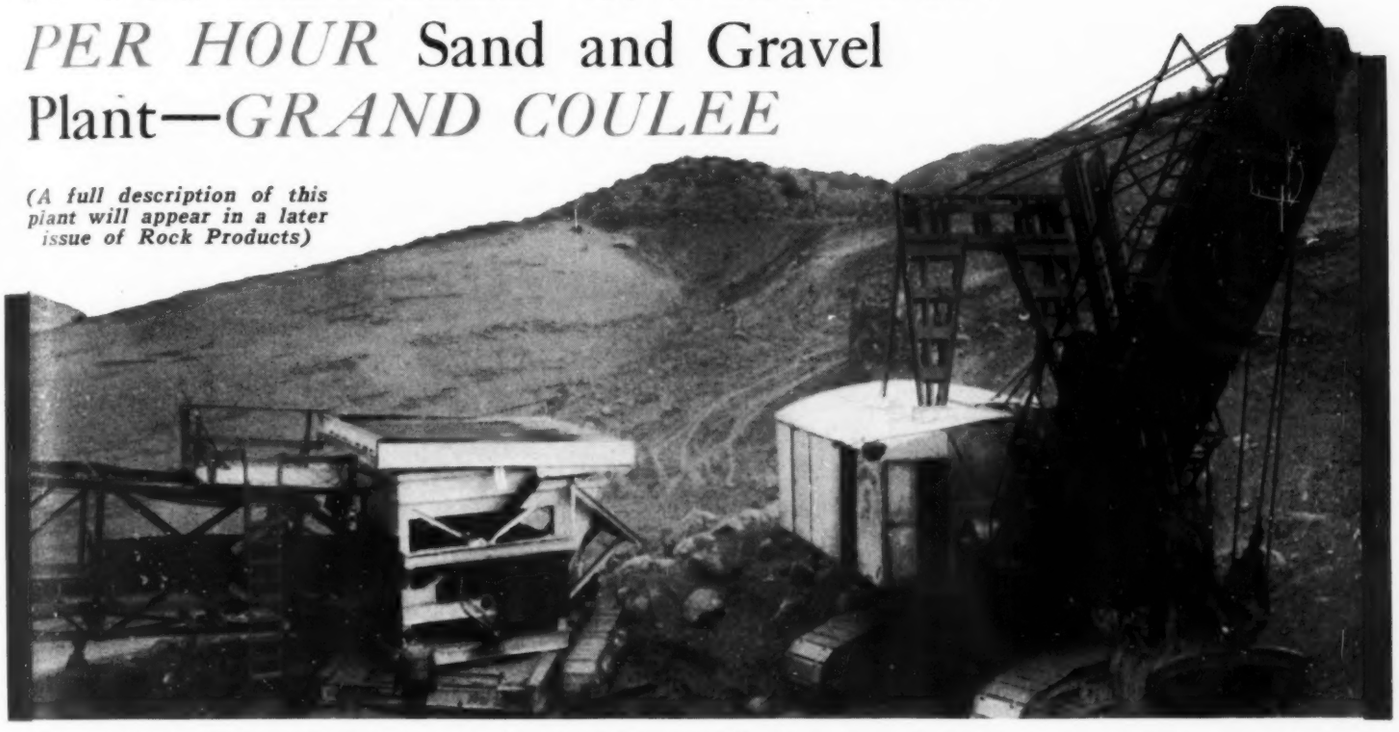
Mr. Hough's new connection in the lime industry is with the Kelley Island Lime and Transport Co., Cleveland, Ohio, where he will be in general charge of all sales.

TVA Ballast Contract

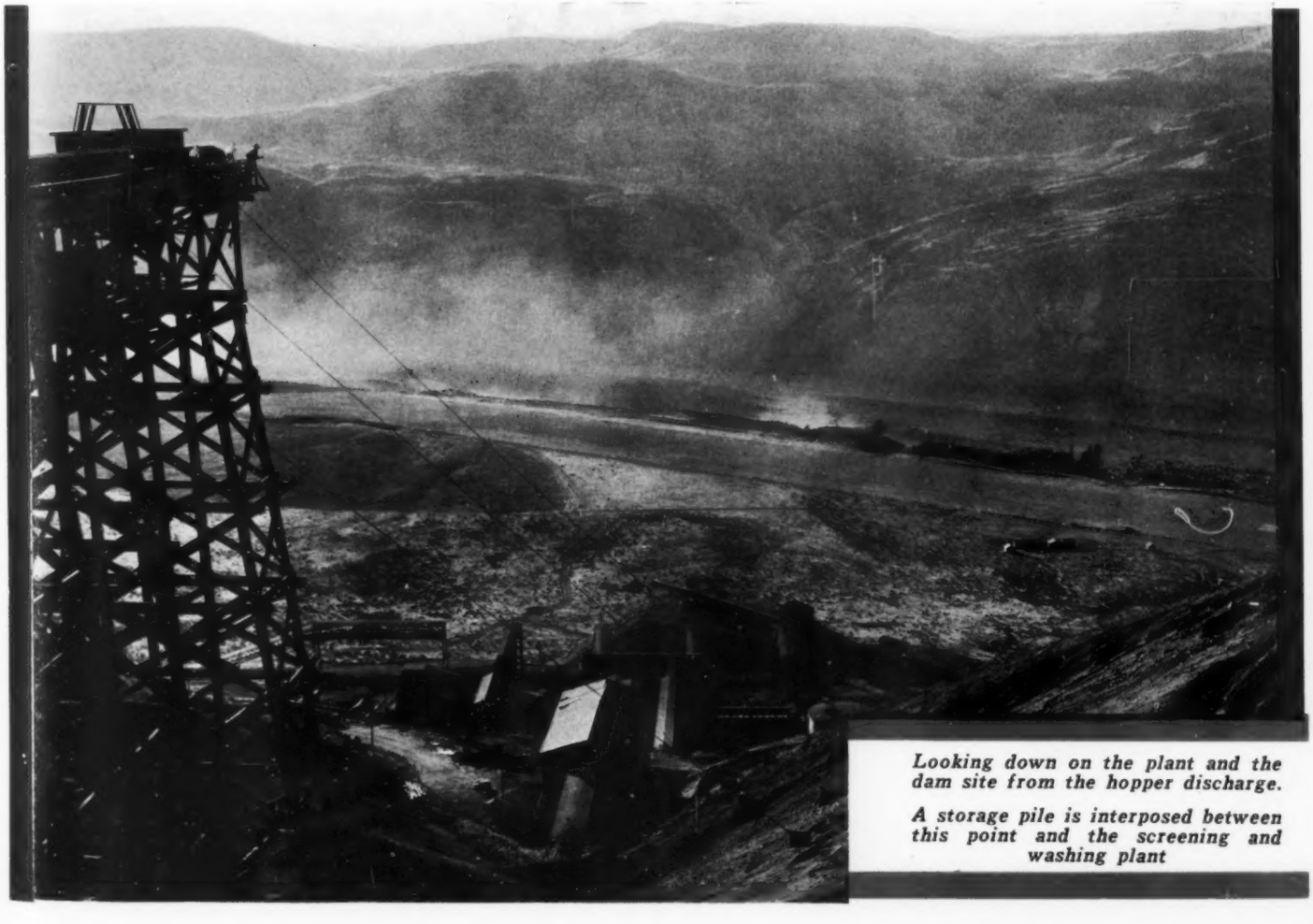
American Limestone Co., Knoxville, Tenn., has been awarded a contract by the Tennessee Valley Authority for approximately 10,000 tons of railroad track ballast for use along that part of the Middlesboro branch of the Southern railway recently relocated by the Authority. The material, valued at about $13,000, will be delivered at Clinch River siding, Grainger county.

A Few *DETAILS* of a *2500-TON PER HOUR* Sand and Gravel Plant—*GRAND COULEE*

(A full description of this plant will appear in a later issue of Rock Products)



Powered feeder hopper, which follows the shovel and throws off boulders from the bar screen on top (the screen rises and they fall off the end)



Looking down on the plant and the dam site from the hopper discharge.

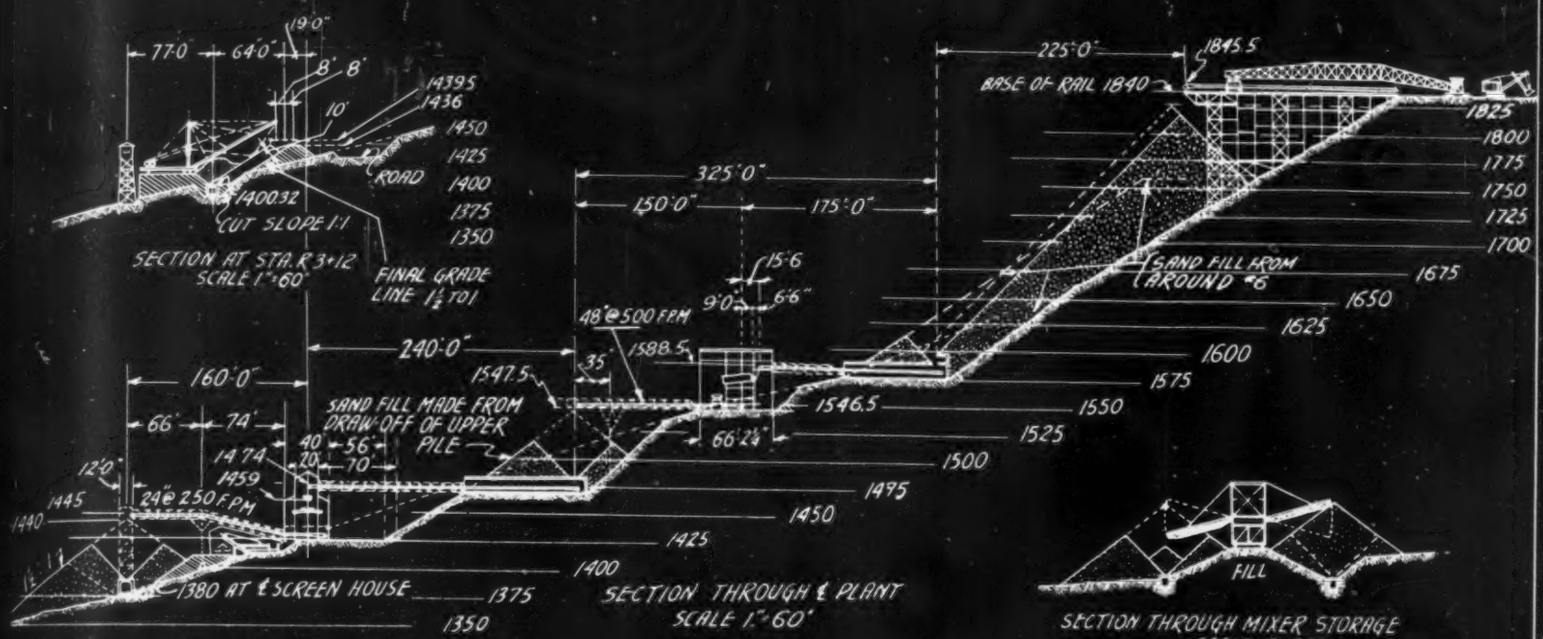
A storage pile is interposed between this point and the screening and washing plant

Grand Coulee Dam Site

The topographic map below shows plan and elevations of the 2500-ton per hour sand and gravel plant—one of the most interesting and elaborate ever built. The builder is the Mason-Walsh-Atkinson-Kier Co., which has had much experience. The design and construction were directly under the supervision of C. D. Riddle, job engineer. The actual designing in detail was done by G. F. Dodge, of the Jeffrey Manufacturing Co., which furnished much of the conveying, elevating, screening and washing equipment. Mr. Dodge was assisted by Robert Matthews, a specialist in the design and construction of such equipment.

The plant is chiefly notable, in addition to its size, for its facilities to separate and recombine sand fractions to make a concrete sand to very exacting specifications. In order to do this a large excess of sand, 1000 to 1500 tons daily, has to be wasted. Fortunately the topography is such that this can be done without excessive cost.

The plant has many features of interest to the commercial sand and gravel operator, and these will be described in detail in an early issue of ROCK PRODUCTS *by Edmund Shaw, West Coast editor, who recently visited the plant with knowledge and experience as engineer, operator and writer to particularly find and report those features.*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64'0
19'0"
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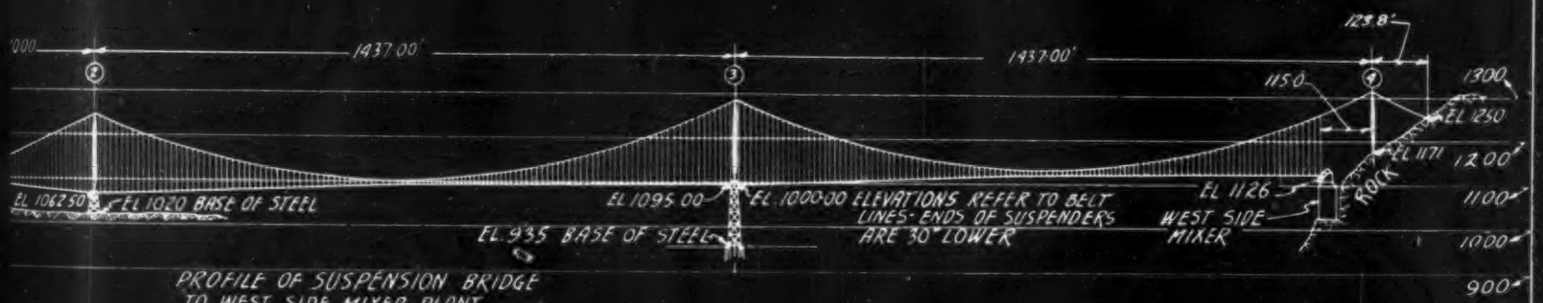
10'
14395
1436
1450
1425
1400
1375
1350
ROAD
1400.32
CUT SLOPE 1:1
SECTION AT STA. R 3+12
SCALE 1"=60'
FINAL GRADE LINE 1½ TO 1
240'0"
160'0"
66'
74'
40
56'
20
70'
14.74
1459
12'0"
24"@250 F.P.M.
1445
1440
1547.5
35'
48"@500 F.P.M.
1588.5
325'0"
150'0"
175'0"
15'6
9'0
6'6"
66'2½
SAND FILL MADE FROM DRAW-OFF OF UPPER PILE
1380 AT ℄ SCREEN HOUSE
1375
1350
1400
1425
1450
1495
1500
1525
1546.5
1550
1575
1600
SECTION THROUGH ℄ PLANT
SCALE 1"=60'
225'0"
1845.5
BASE OF RAIL 1840
1825
1800
1775
1750
1725
1700
1675
1650
1625
SAND FILL FROM AROUND #6
FILL
SECTION THROUGH MIXER STORAGE
SCALE 1"=60'


1437.00'
1437.00'
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EL 1250
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1200
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1000
900
EL 1062.50
EL 1020 BASE OF STEEL
EL 1095.00
EL 1000.00 ELEVATIONS REFER TO BELT LINES. ENDS OF SUSPENDERS ARE 30" LOWER
EL 935 BASE OF STEEL
EL 1126
WEST SIDE MIXER
ROCK
PROFILE OF SUSPENSION BRIDGE TO WEST SIDE MIXER PLANT
SCALE 1"=150

1325
1300
1275
1250
1225
1200
1175
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1125
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1075
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STA 5+22 EL 1044.64
STA 5+85
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TO EAST MIXER
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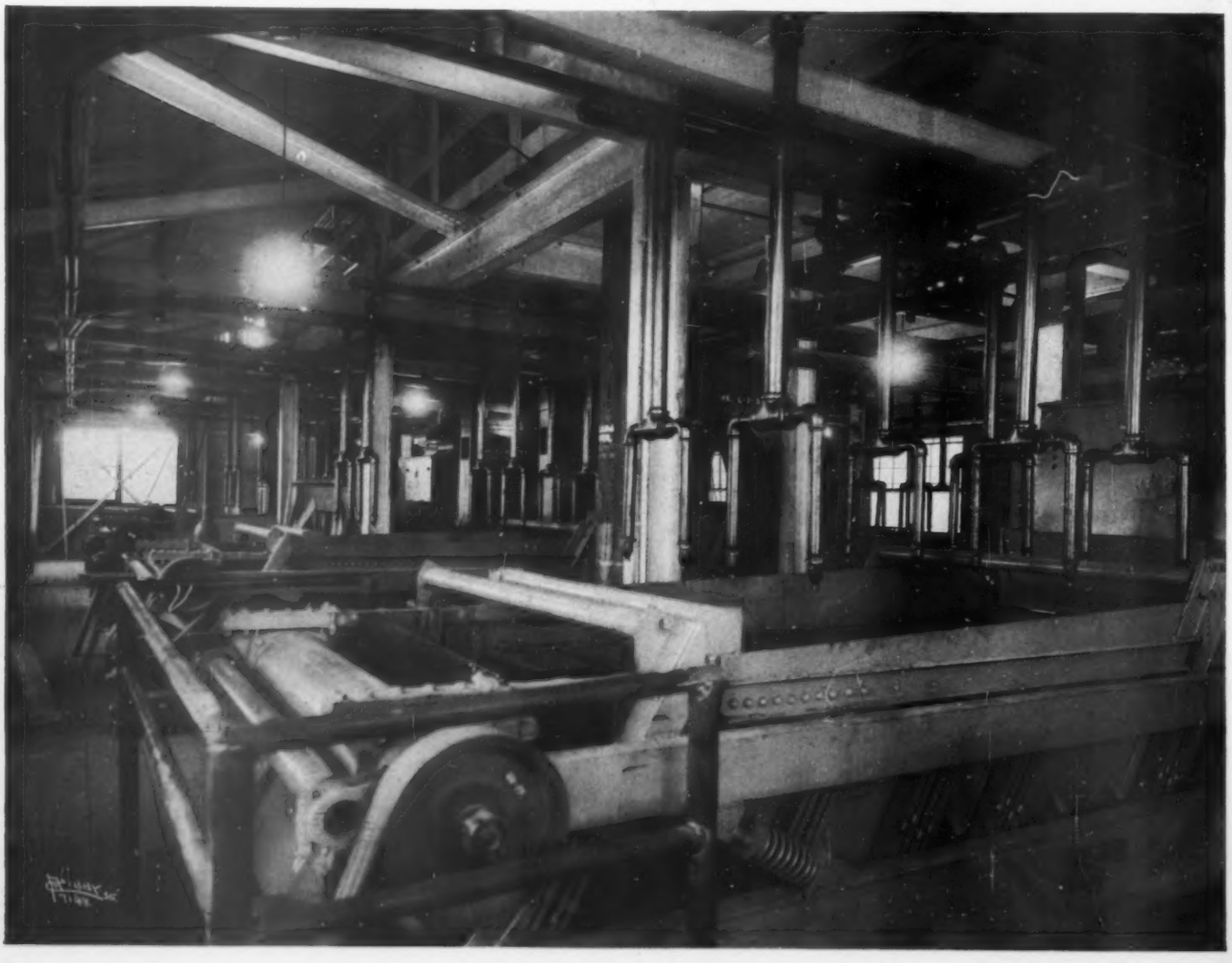
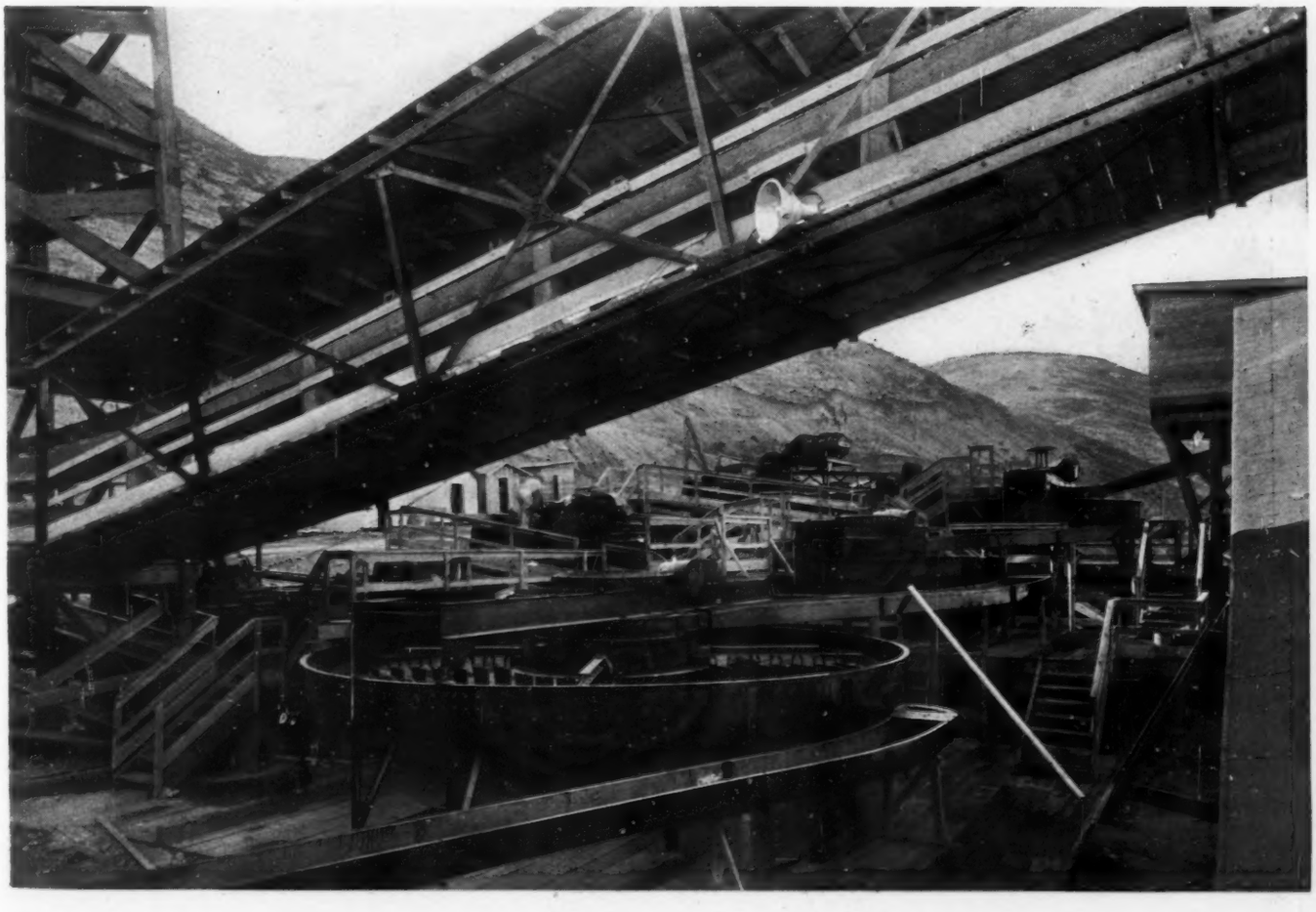
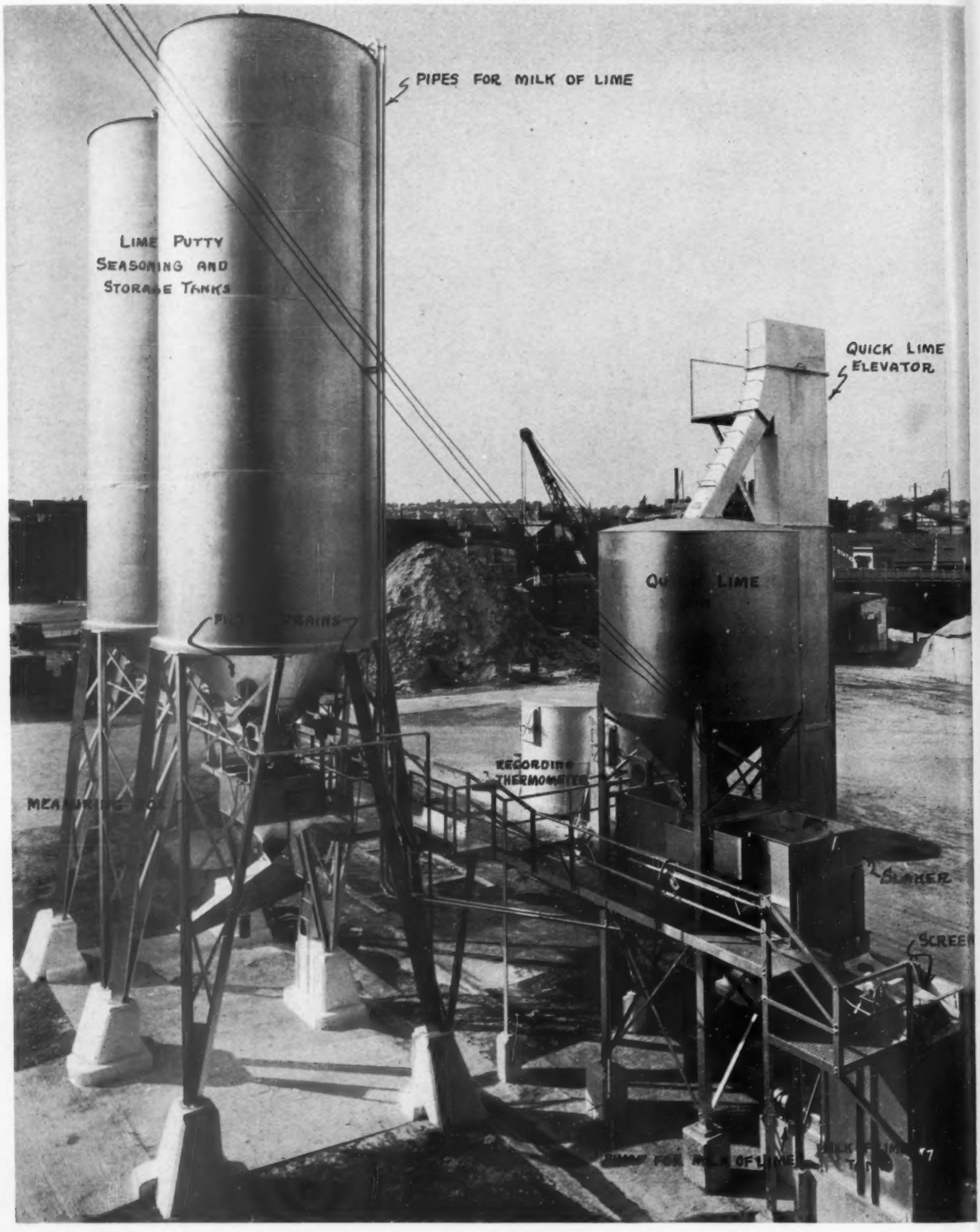
GRADE OF BALL FIELD 1165.0
CONVEYOR TO WEST MIXER ON SUSPENSION BRIDGE



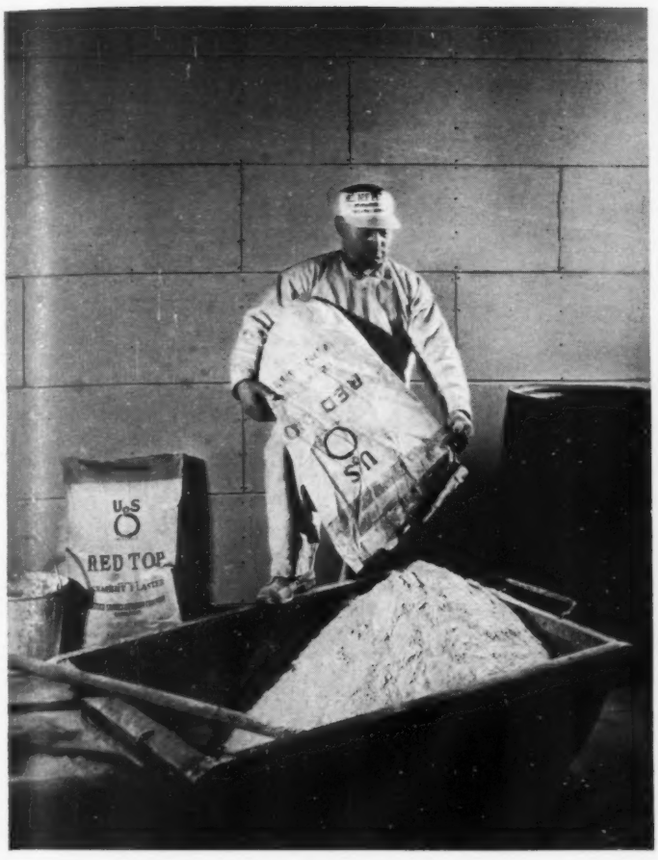
ABOVE—Front view of screening plant (from below) at the Grand Coulee Dam. BELOW—Symons shaking sizing screens

ABOVE—Probably the largest aggregation of Jeffrey chain drag sand dewaterers and classifiers in existence—this more than any other feature, Editor Shaw says, emphasizes the size of the Grand Coulee plant. BELOW—Battery of Dorr bowl classifiers where sand is still further refined and sized





General view of the Brooks-Taylor process putty plant of the Warner Co., Wilmington, Del. Quick lime is unloaded from box cars and elevated by means of the encased bucket elevator which delivers the quick lime to the small elevated tank. Beneath this tank is a slaker. The two putty tanks are at the right. Note the vibrating screen and receiving tank for the milk of lime at the lower right-hand corner. Note the arrangement of the legs are such that trucks can drive through in any direction. A full description of this new plant will appear in a later issue



United States Gypsum Co. (and several others) has been doing much recently to increase the plasticity of gypsum plasters

Fine Grinding Plaster

Much progress has been made recently in making gypsum plasters more plastic. In general this consists of fine grinding the calcined gypsum in ball or tube mills after the general process developed at the National Bureau of Standards several years ago. Each company has developed its own process, more or less, but the essential features appear to be the same. The tube-mill ground gypsum under proper control apparently acquires some new chemical properties through recombination of some of the water of crystallization, as well as greater fineness

Merger Completed

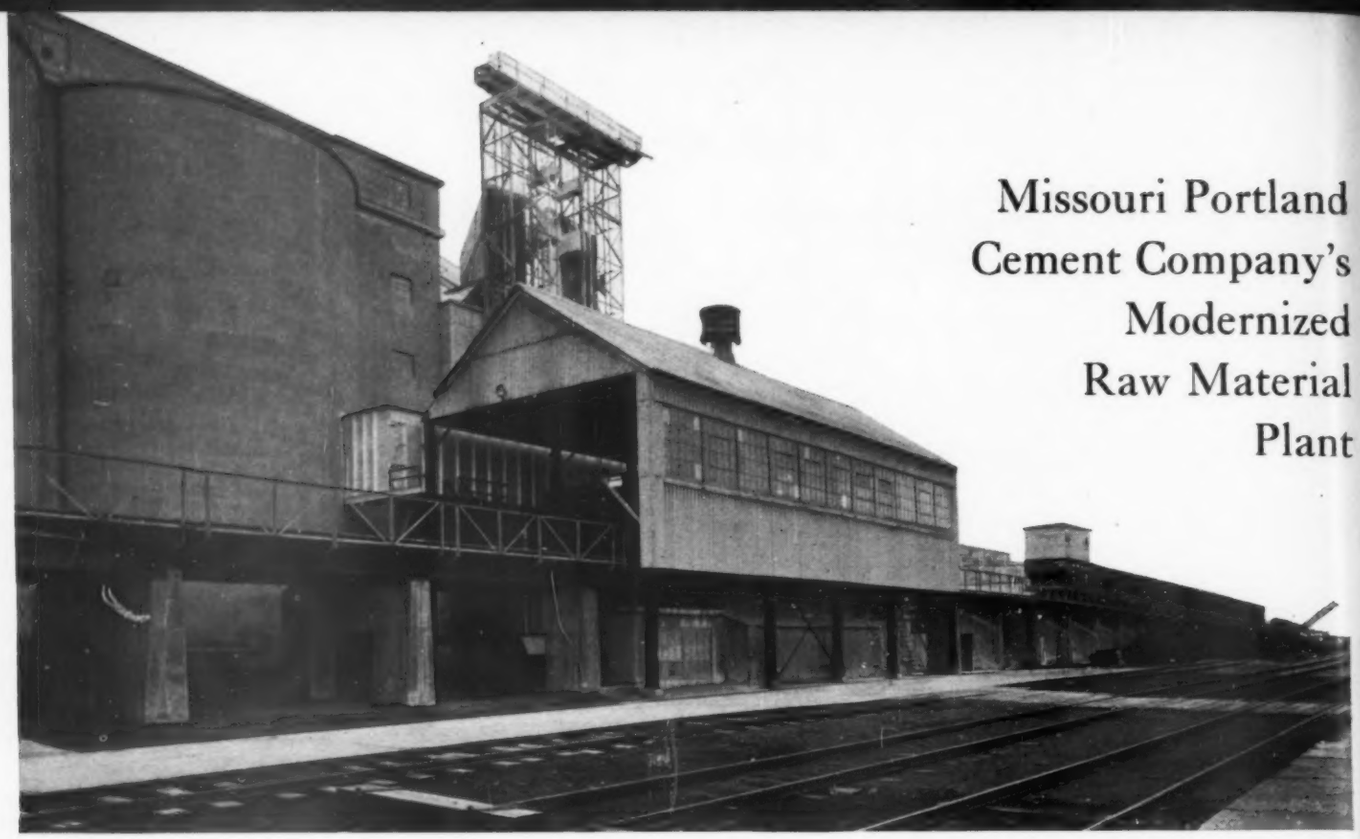
National Gypsum Co. merger with Universal Gypsum and Lime Co. was completed recently when stockholders of both firms approved the merger at special meetings. The National meeting was held at Buffalo while the Universal meeting was held in Chicago.

In July directors of National announced a plan whereby the securities of Universal would be acquired on an exchange basis and the latter made a wholly owned subsidiary of the former. Under this proposal one-half share of National 7% $100 par value preferred was to be issued for each share of Universal $4 cumulative, $60 par value preferred. One and one-half shares of National class A were to be given for each ten shares of Universal class A and class B common.

Certain-teed Products Corp. has developed a method of shipping wallboard sheets in pairs, with the face sides together, called "twin mounting." A strong tape across the ends of the boards holds them tightly together

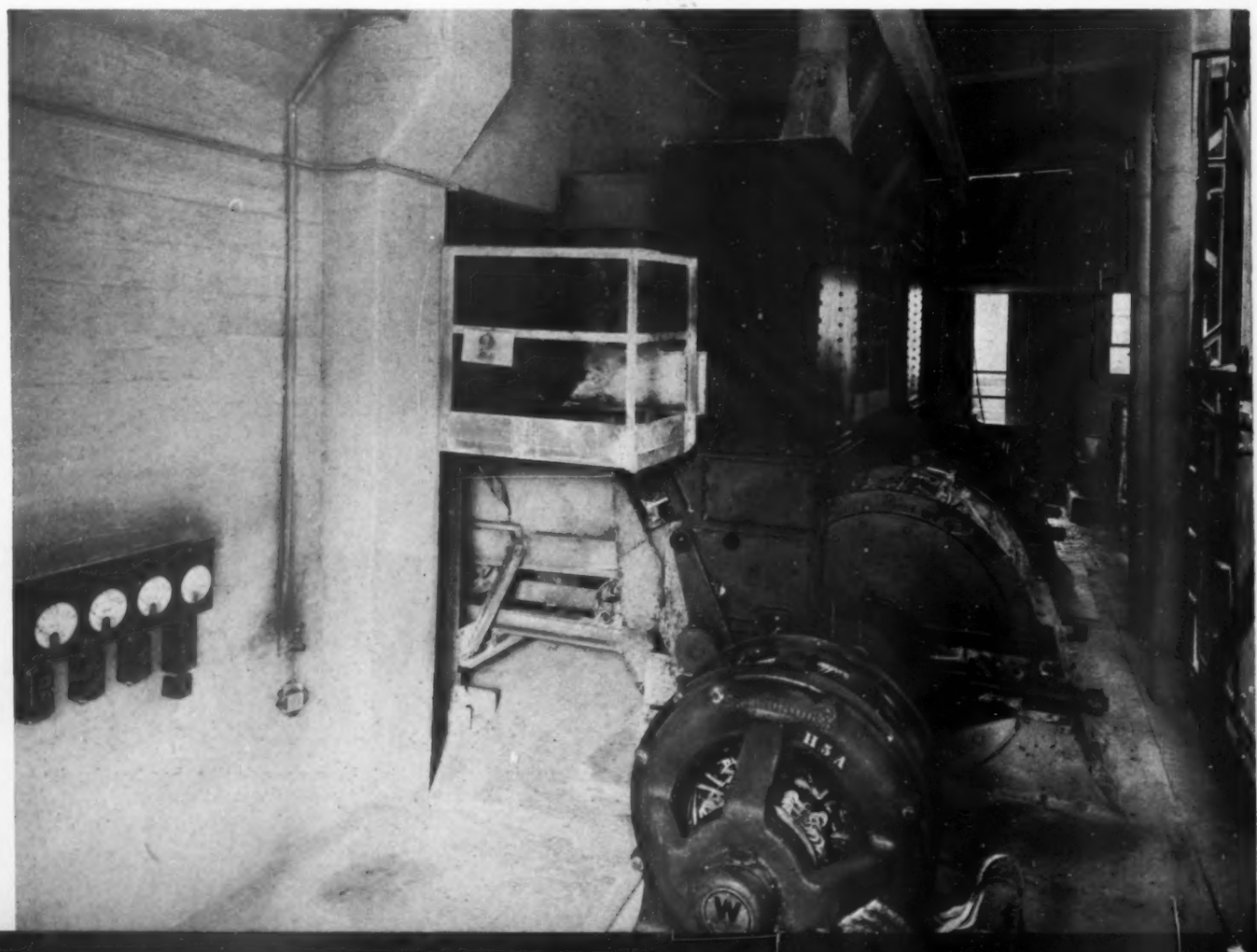
Certain-teed Products Corp. also has developed a "life preserving" paper bag for its new plastisized plaster, so that it keeps fresh for months

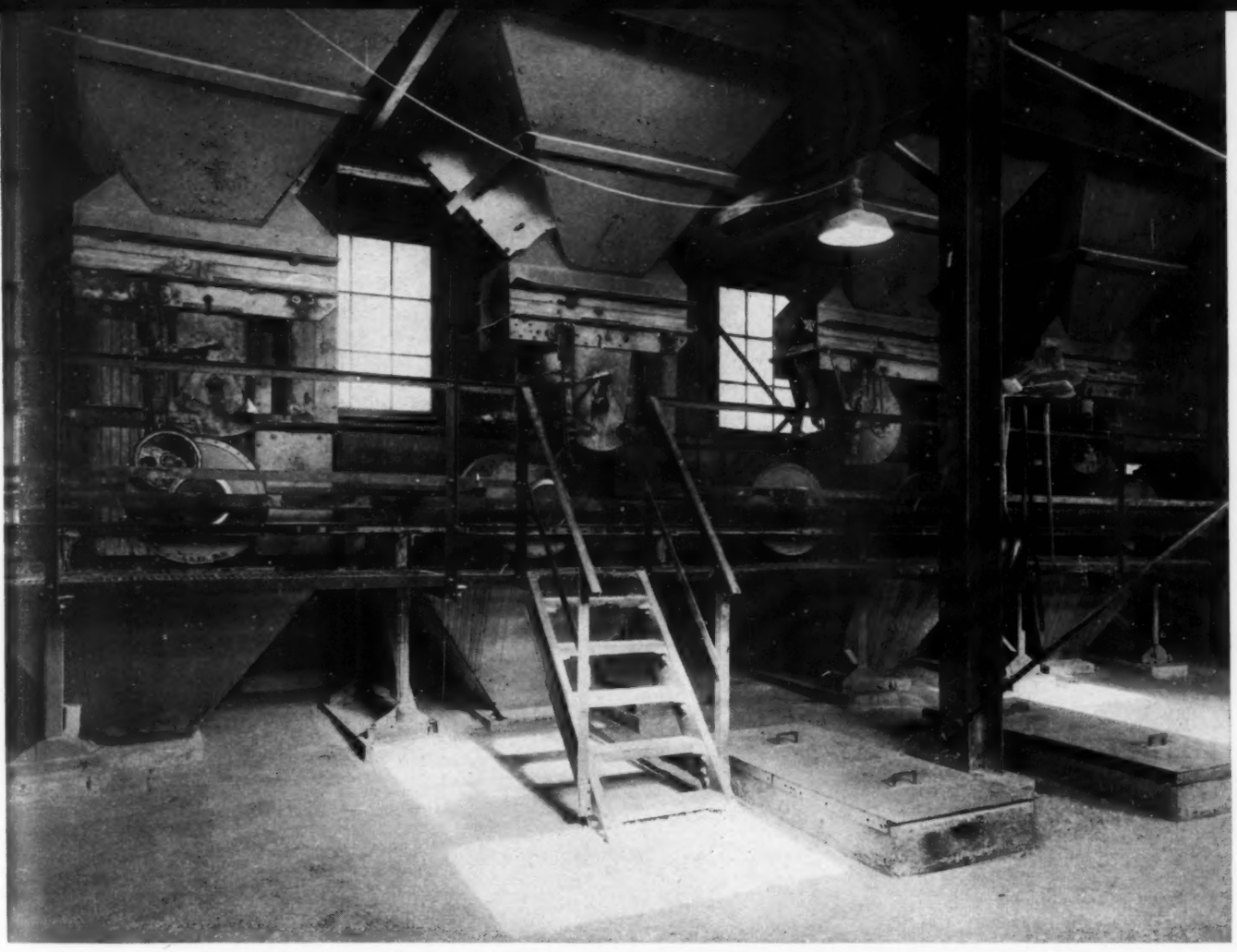
Missouri Portland Cement Company's Modernized Raw Material Plant



ABOVE—General view of the new raw material crushing unit of the Missouri Portland Cement Co., Prospect Hill (St. Louis, Mo.) plant. The building in the center houses the two hammer mills shown below. The balanced skip hoist is shown behind. The crusher house also contains the two Norblo dust collector fans, and the two-unit dust collector is shown between the crusher house and the skip hoists. A complete description of this plant will appear in a later issue of Rock Products

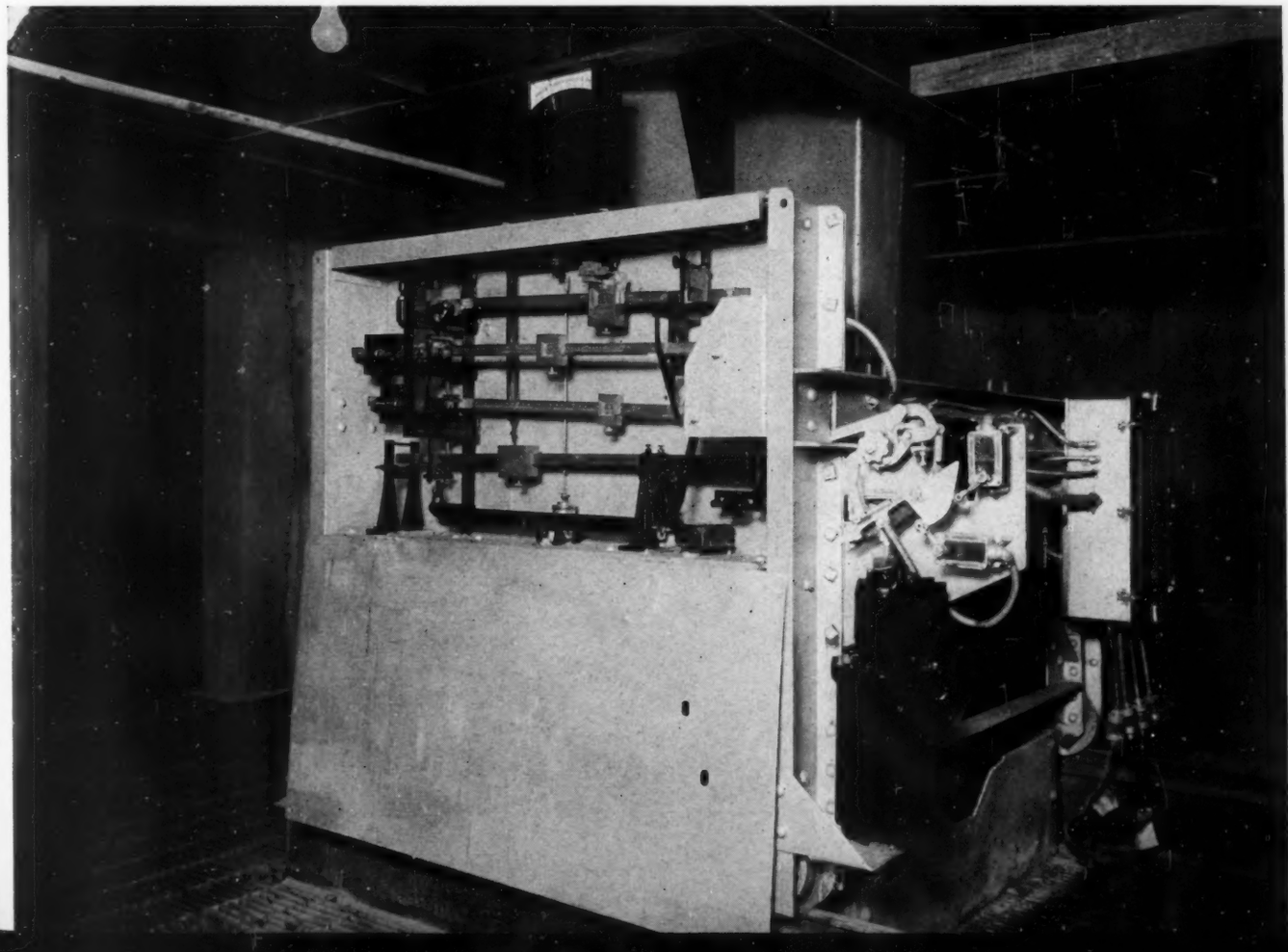
BELOW—Two Dixie hammer mills crushing either limestone or shale, or both, direct driven by Westinghouse motors, feed to a Chain-Belt apron feeder to the loading bins of the Beaumont skip hoists. All these parts are tightly enclosed and the dust collector intakes shown in the center of the picture remove all dust, which is taken from the dust collector and fed to the skip hoist loading bins

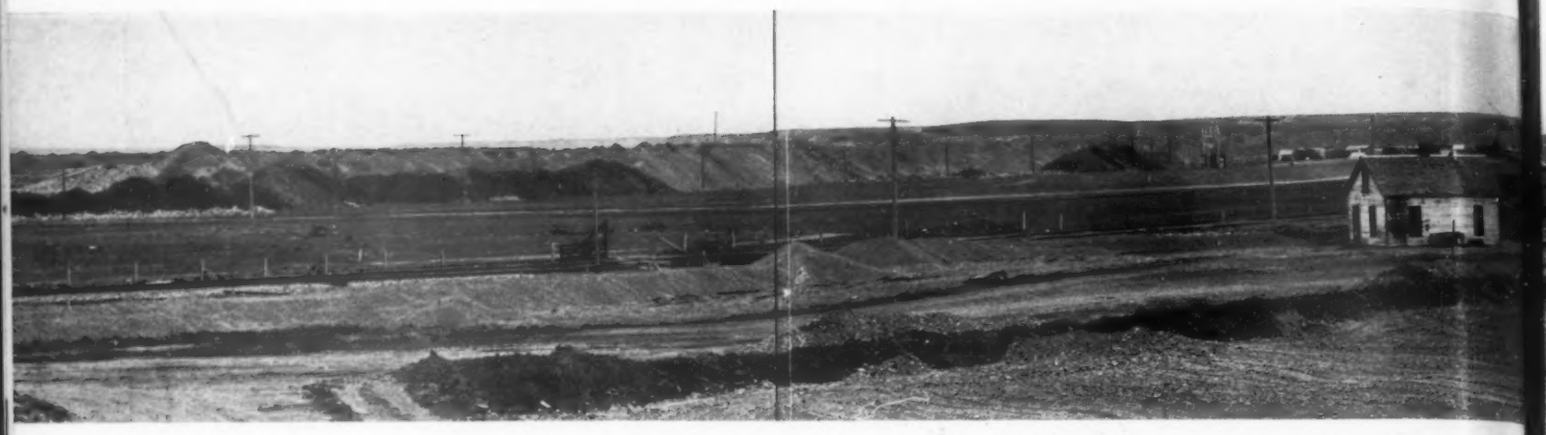




ABOVE—Raw materials are discharged from the skip hoists to bins which feed this F. L. Smidth & Co. Cylcup conveyor to raw material storage bins

BELOW—Automatic Blaw-Knox weighing batchers which proportion three different materials at one time

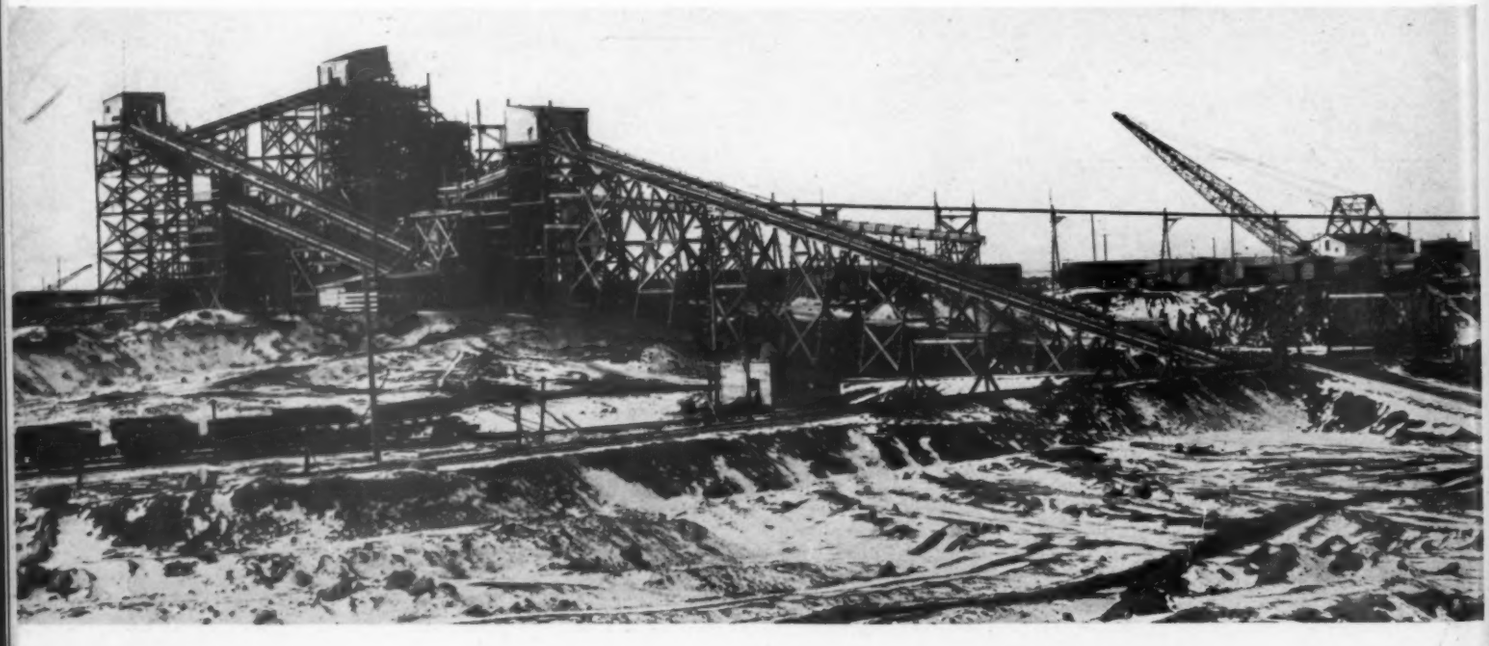




Panoramic view of the plants of the Becker County-Shiely Co. (in background) and J. L. Shiely

LEFT: Messrs. E. A. Mullen and Joe L. Shiely, who have the distinction of being the only actual, bona fide, commercial sand and gravel producers to win a contract for government material, which required the building of entirely new, large plants for one job only. They have been compelled to invest over a million dollars for contracts to be expected or hoped for rather than "in the bag." In this picture, Joe Shiely says they look tough—but that was before they were awarded new contracts for about $1,250,000 worth of sand and gravel (see ROCK PRODUCTS, December, 1935). Incidentally, the government got bids from producers within a 1500-mile radius before the awards were made

BELOW: The J. L. Shiely Co. plant as the 1935 operating season closed. The track hopper for receiving the raw material is under the railway track at the right. The 6x12-ft. rotary scalping screen sends everything over 3½ in. to a McCully gyratory crusher. All sizing is done on vibrating screens. The plant was designed by the Link-Belt Co. and nearly all the equipment is of this make. Sand is recovered and separated in four conical sand dewaterers, two 96-in. and two 72-in., but this part of the plant will probably be further developed

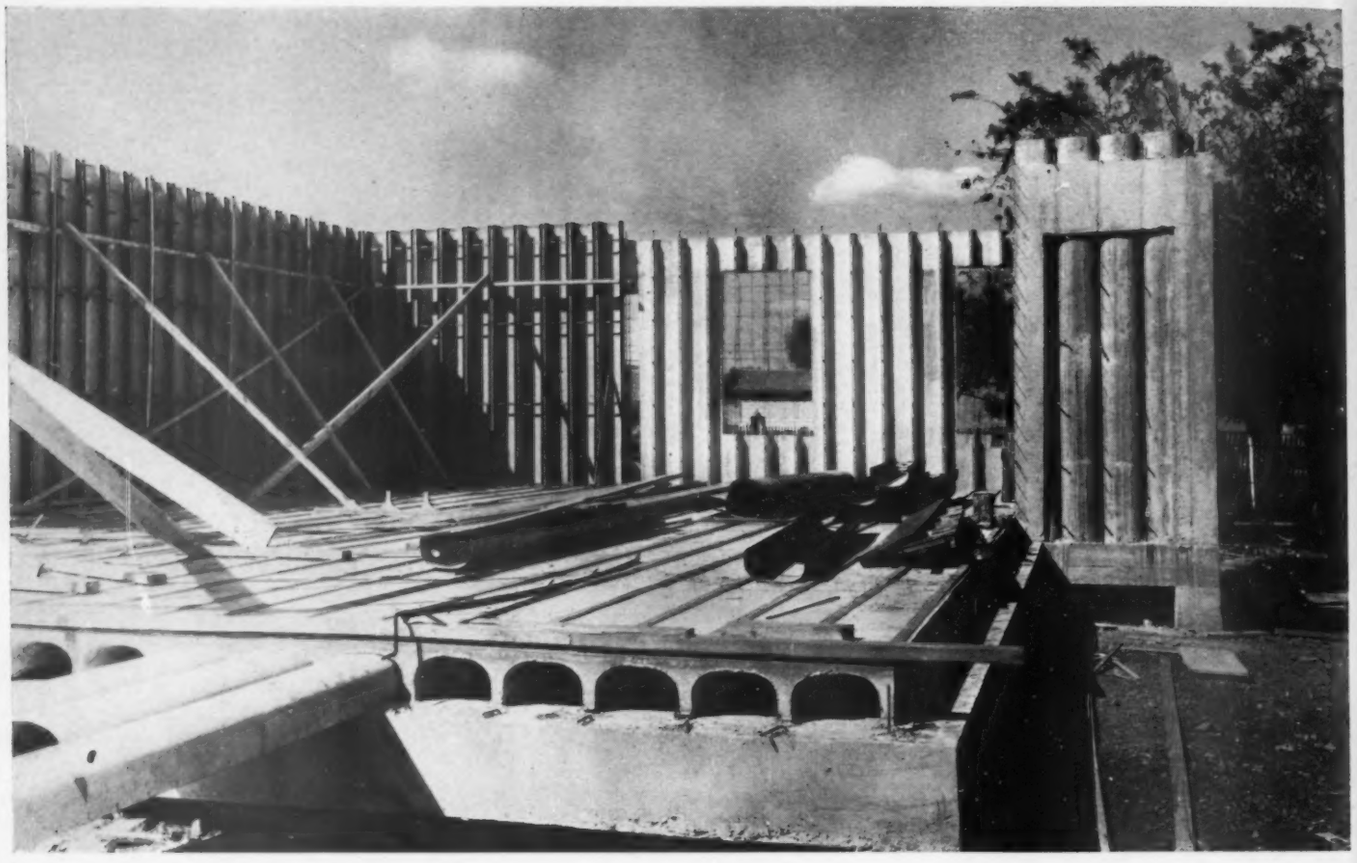


Co. (right) operated for the construction of Fort Peck dam and various incidental structures

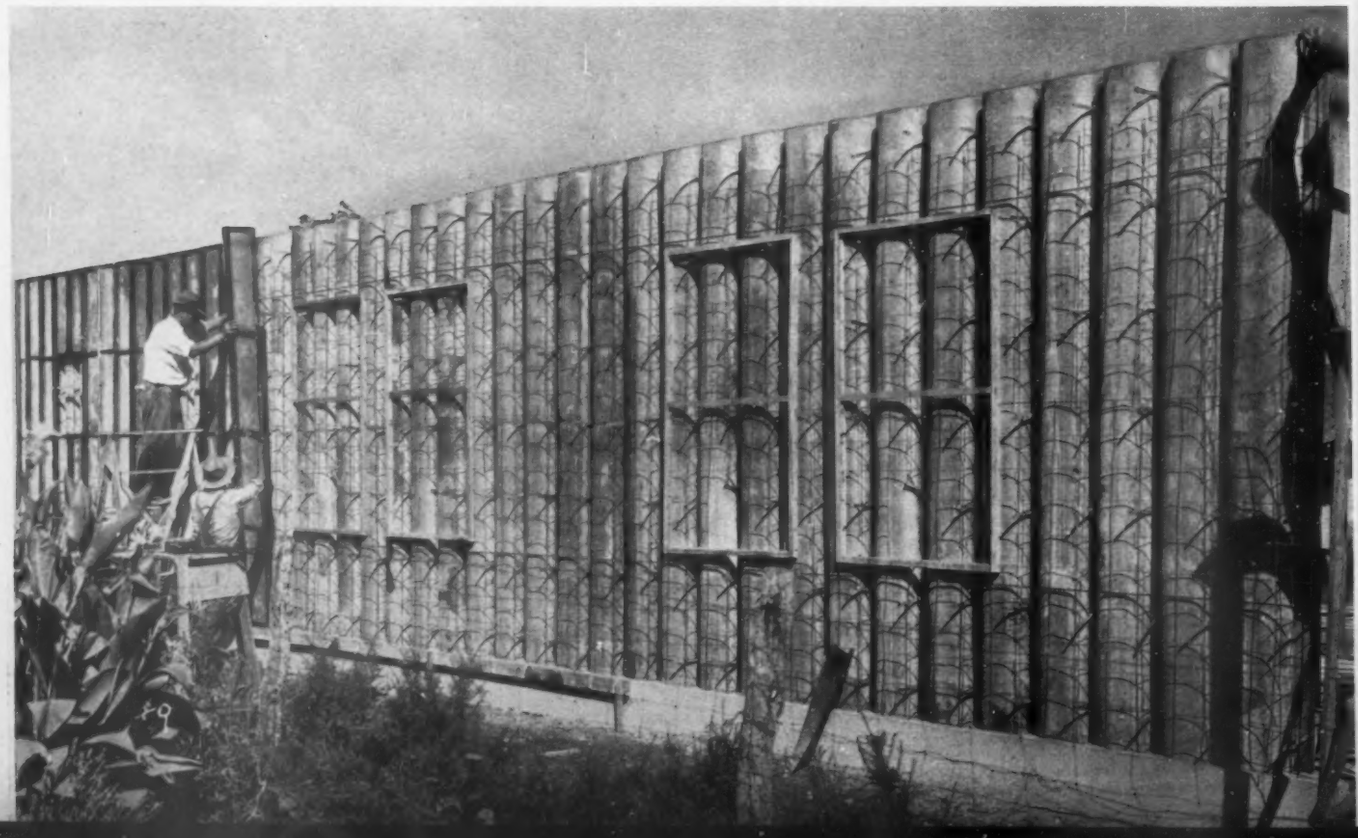
BELOW—The traveling gravel plants of the Becker County-Shiely Co., which took a contract for furnishing screened but unwashed gravel for the toe of the Fort Peck dam, were illustrated and briefly described in ROCK PRODUCTS a year ago. Since then these two plants of very original design have completed turning out their first quota of approximately 2½ million cubic yards and are ready to produce 1¼ million more, which was awarded late in 1935. The latest contract price for this material is approximately 53c per cubic yard, f.o.b. plant

Here is a "depression" development. It used to be thought that a wet-process cement plant meant an investment of a million dollars, at least. This one, put into operation in 1935 by the Washington-Idaho Lime Products Co. at Orofino, Ida., is reduced to the barest essentials. It probably cost about 25% of the usual cement plant investment. Is it typical of a localized cement industry? There is food for thought here. At the left we show the first assistant chemist of the plant—the first lady to hold such a position in the cement industry. She is Miss Martha E. Simons, daughter of the president, E. J. Simons, Spokane, Wash. Burton B. Pierce is superintendent. The plant has 500 bbl. capacity daily, and is said to have operated to capacity since it was put into operation on September 26

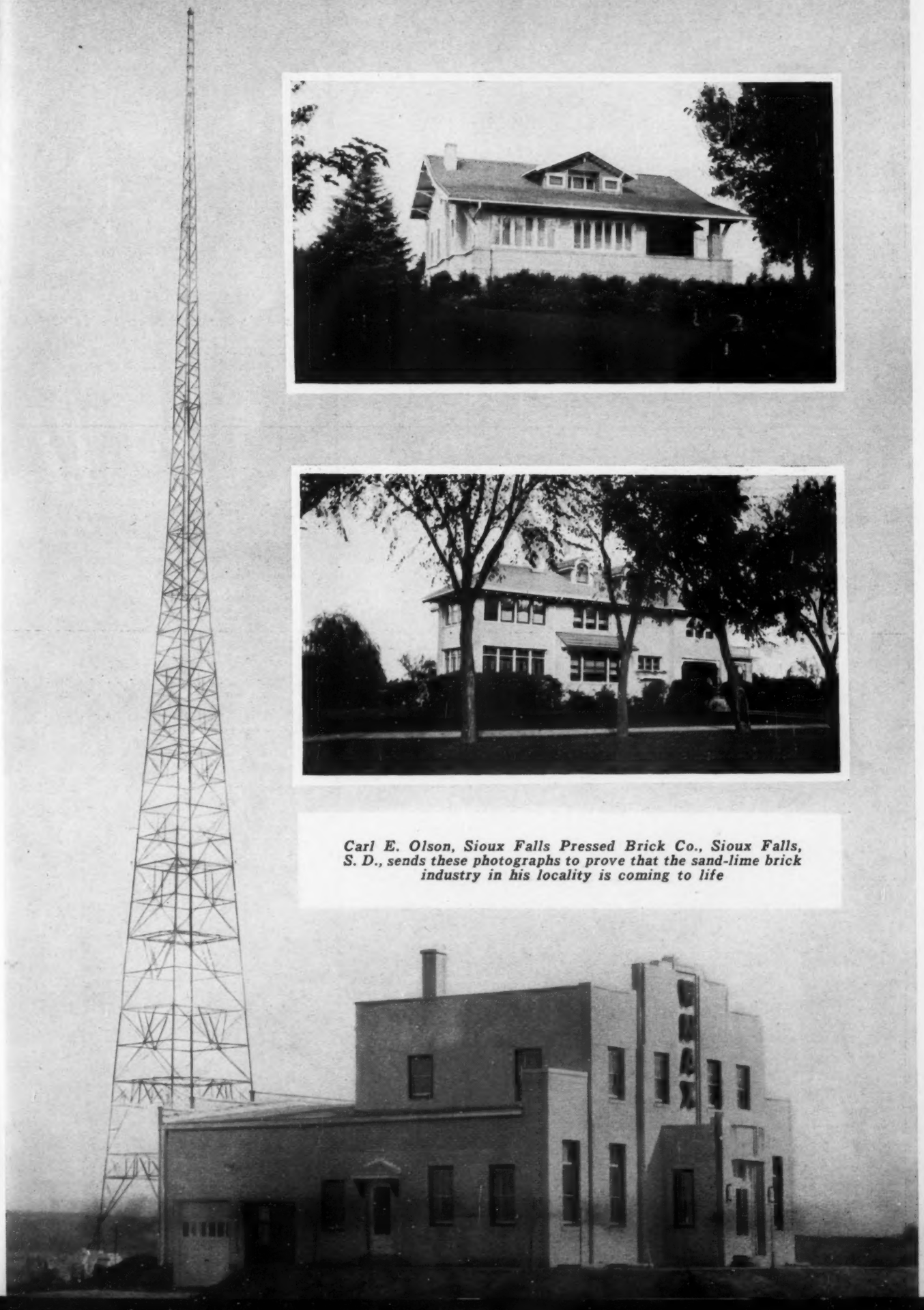
Transportation developments—ABOVE, Southern Pacific Co. handles bulk cement. BELOW, Ford V-8 trucks for concrete batches on southern California job

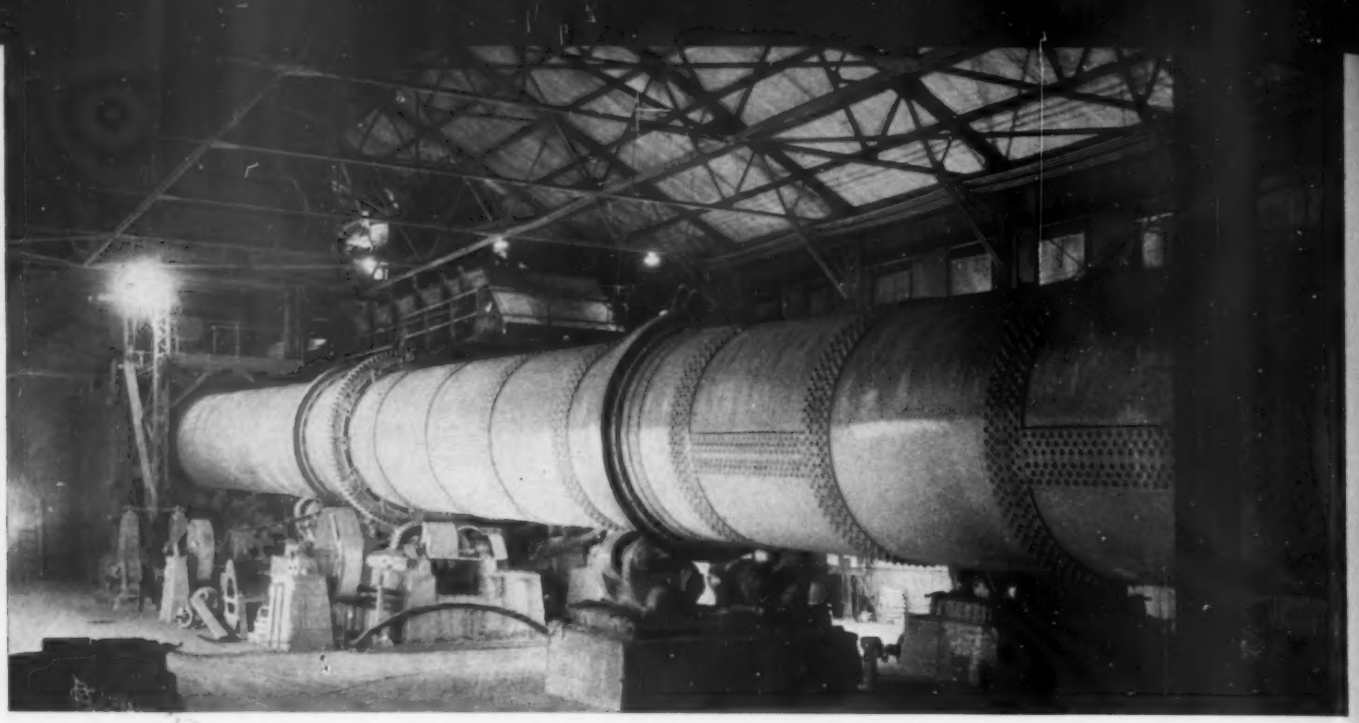


A new process of monolithic concrete residential construction recently developed by L. L. Eldridge, San Antonio, Tex. This method gives strong arched walls with a minimum of concrete.—Photos sent by A. P. Turner, Turner Gravel Co., San Antonio



Carl E. Olson, Sioux Falls Pressed Brick Co., Sioux Falls, S. D., sends these photographs to prove that the sand-lime brick industry in his locality is coming to life





Kiln room of the Spokane Portland Cement Co. plant, showing one of the two kilns—this one is unaltered 8½x160 ft., dry process. At the left (above) can be seen the top of the Lepol kiln housing on the other kiln, which has been cut down to 8½x100 ft. The kiln equipped with the Lepol traveling grate has a capacity of 1200 bbl. per 24 hrs.; the other 800 bbl. The coolers were 7x70 ft., rotary type; on the rebuilt kiln the cooler is 7x65 ft., this one being provided with special lifters, so that the clinker is discharged at 350 deg. F.

The Spokane Portland Cement Co. has done a thorough job of modernizing its 22-year-old plant at Irwin, Wash., during the past year. This company has installed the first Lepol kiln in North America. This device, made by the Polysius Corp., Bethlehem, Penn., was described in Rock Products, March 12, 1932, pp. 42-47. Thirty-four installations have been made abroad, and remarkable fuel economies have resulted. Surplus heat of the rotary kiln is drawn down through a traveling grate to which a dampened raw material is fed from a granulator. This nodulized raw material is thus heated and partly calcined before being discharged to the rotary kiln, where the calcination and sintering is completed. In addition to preparing the raw material into nodules, in which form it is more readily burned, the dust is practically all recovered, and the surplus heat made to do useful work. A complete description of the Spokane Portland Cement Co. installation will appear in one of the later issues of Rock Products

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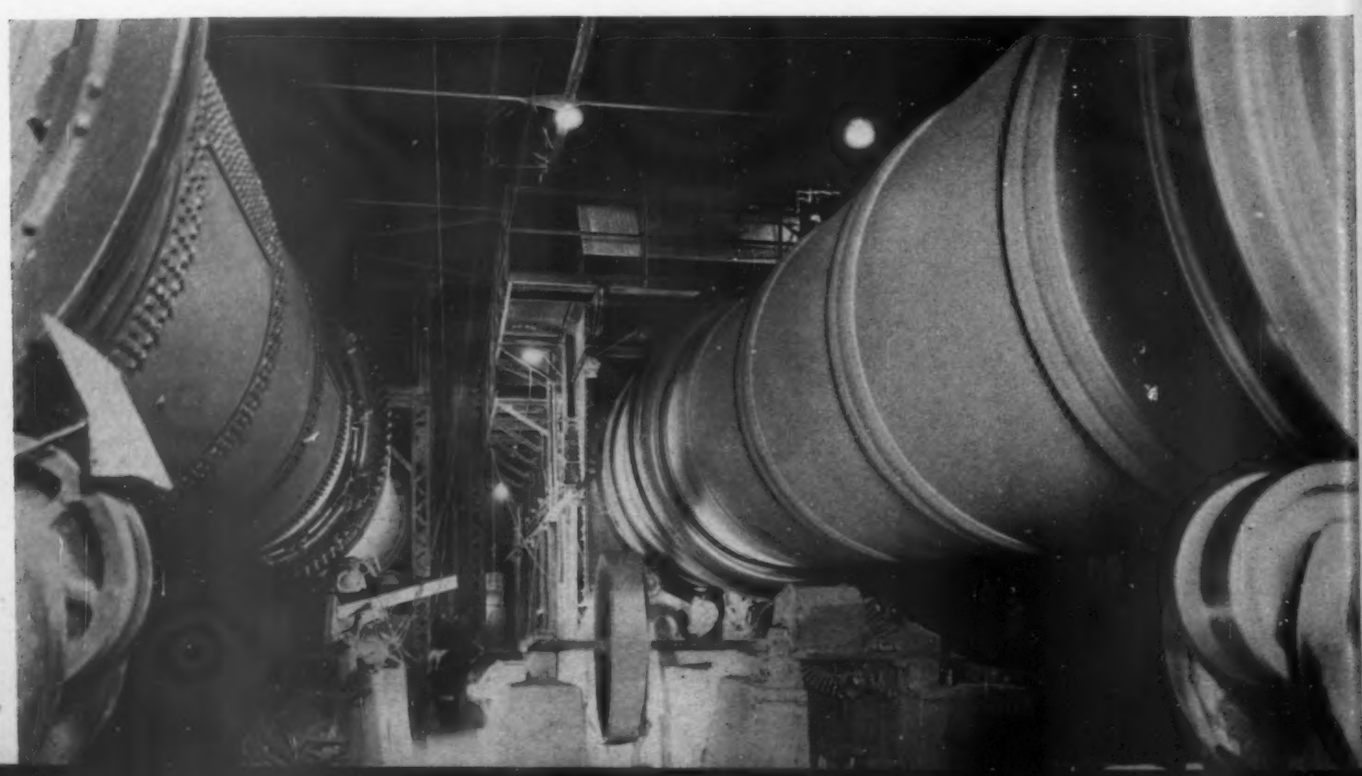
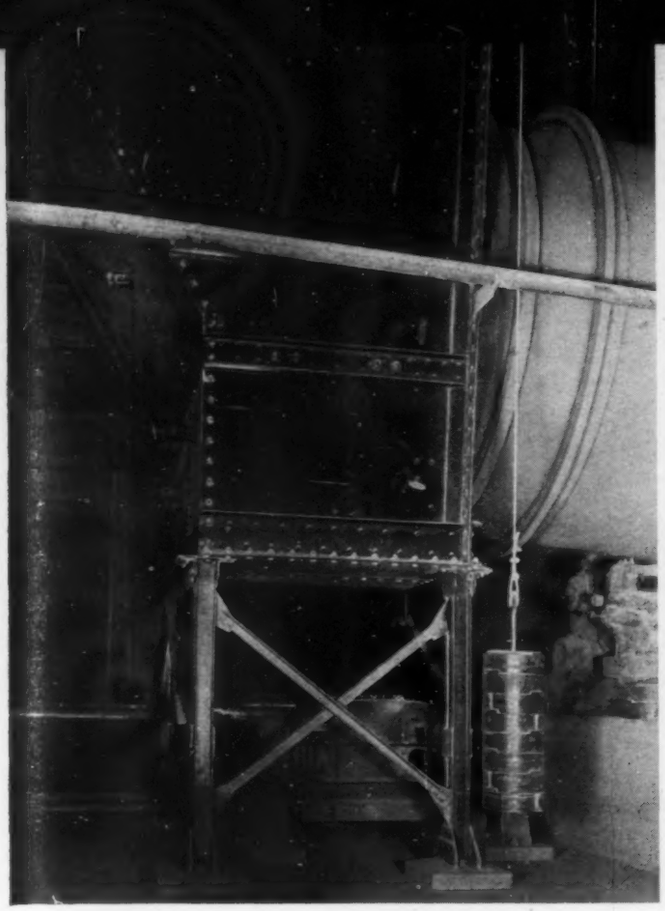
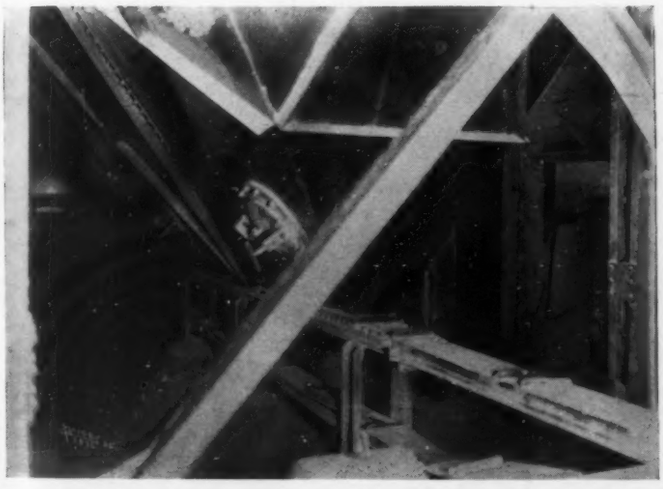
Original unaltered kiln at the left and the Lepol grate equipped kiln at the right. A new drive was installed on the Lepol kiln; the old belt pulley shown in the center is not used. To move the traveling grate requires 3 hp., the granulating drum (where the raw materials are nodulized) requires 24 hp., the suction fan requires 65 hp., a total of about 100 hp. over that of the old kiln. Coal consumption was reduced from something over 100 lb. to 46 lb. per bbl.



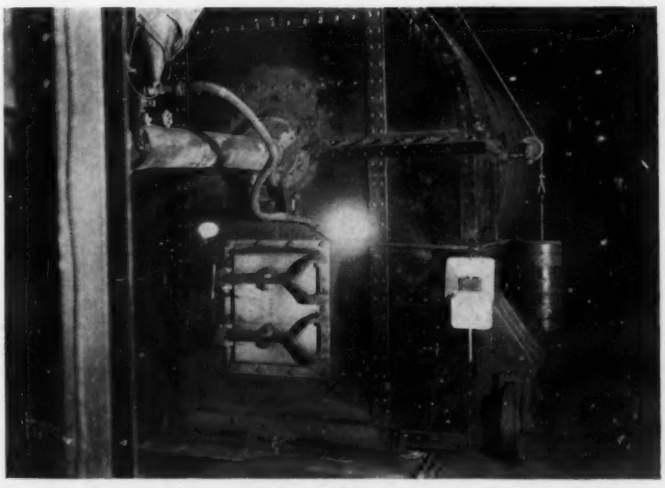


Connection of rotary kiln with Lepol grate discharge—a special seal

Bailey Type B fan, 80-in., handling 27,000 c.f.m.; the temperature of the stack discharge is 200 deg. F.

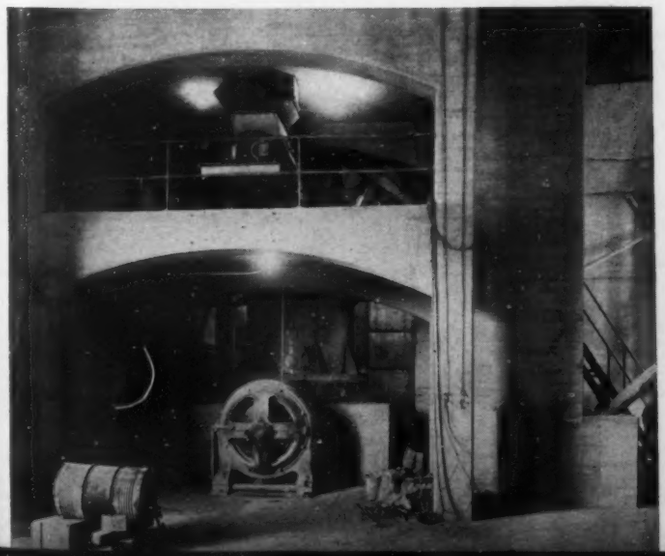


Hopper under the traveling grate, collecting dust which is returned by the chain conveyor to the raw material feed



ABOVE—New kiln hood; special seal; water-cooled burning nozzle

LEFT—B&W mill used to grind both raw material and clinker



BELOW—Discharge of raw material to Cera pump—part of raw blending system

Rock Wool Manufacture

Attracting Attention of Many Rock Products Producers

NUMEROUS inquiries have reached the editor during 1935 from all parts of the country regarding the method of manufacture of rock or mineral wool. The diagram at the top of the column on the right shows a typical flow sheet of the process. Below that is the design of a typical cupola furnace for melting the stone, as designed by the Whiting Corp., Harvey, Ill. The description of the manufacturing process herewith is from a paper by Charles F. Fryling, chemist, Illinois State Geological Survey, and Orval White, president, Mineral Insulation Co., Chicago Ridge, Ill., read at the Third Mineral Industries Conference of Illinois, Urbana, May 18, 1935 (see ROCK PRODUCTS, June, pp. 54-55).

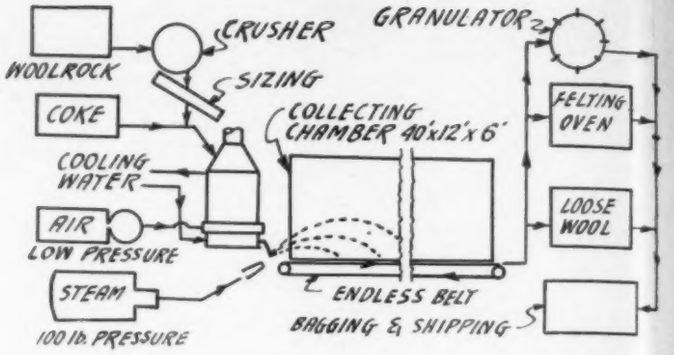
A mixture of rock, or slag, and coke, is fed into the top of the cupola, and molten material flows out at the bottom in a steady stream. Combustion is supported by a blast of air fed into the bottom of the cupola. A temperature of about 1500 deg. C. is attained and cooling is effected by a water jacket. A steam blast, issuing from a trough-shaped nozzle at a pressure of about 100 lb. per sq. in., is directed at approximately a right angle to the stream of flowing material. This is broken up into innumerable small droplets which are propelled into a collecting chamber. Duing its flight through the air, each little droplet drags out a small thread of material which solidifies before falling.

The raw material must not be so fine that it blows out of the cupola or plugs it up. It is considered advisable to use an assortment of definitely sized materials in order to prevent excessive channeling within the cupola. The object of the melting operation is to secure a steady stream of molten material of homogeneous chemical composition of the proper blowing temperature.

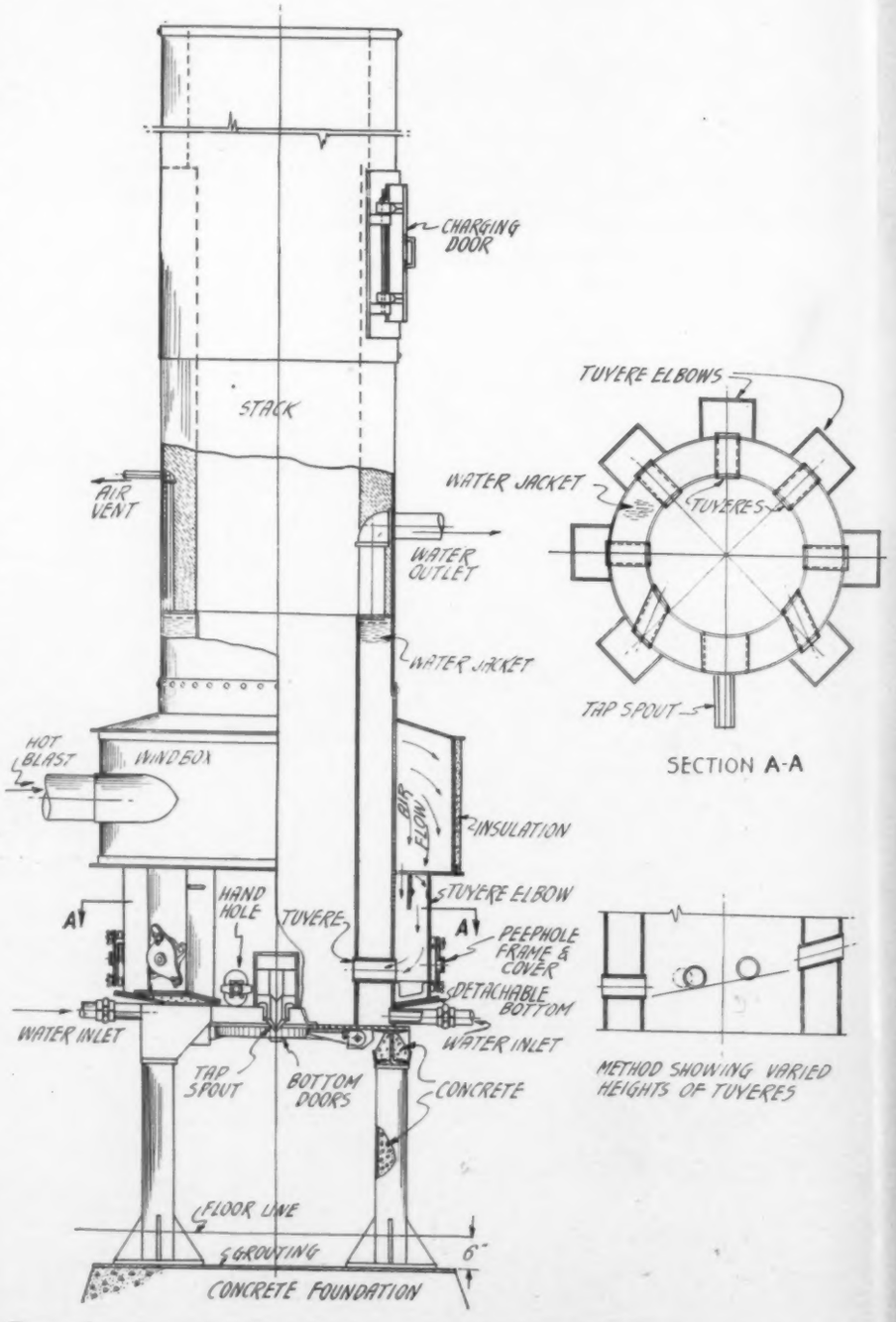
Wool may be collected on an endless belt in a chamber about 6 ft. wide and 40 ft. long. A small quantity of oil is usually added to the stream used for blowing in order to reduce dust, to secure better cohesion and to produce a more water-resistant product.

The crude wool may be fabricated into any of the various forms required by the trade. It can be treated in special equipment in order to produce a refined product for blowing between walls, it can be loosely compressed into blankets, inserted into ready-built forms, sewed up between paper or wire netting to form quilts, or fabricated into plasters, bricks, and other forms.

Pre-sintering of pulverized raw materials in a rotary kiln is suggested as a suitable method for production of clinker of controlled composition for subsequent melting



Typical flowsheet of a rock-wool manufacturing operation



Type of water-cooled blast furnace used to melt the rock mixture, slag or natural wool rock—This one designed by the Whiting Corp.

in a cupola. Rock wool could then be made from suitable mixtures of such materials as homogeneous or nonhomogeneous woolrocks, sandstone, shale, sub-woolrocks, slag, cinders, cement rock, clay, sand, gravel, loess, till, limestone, dolomite and oyster shells.

For a plant of 1000 lb. of rock wool production per hour the authorities quoted give the following estimate of cost:

Cupolas (two, small)	$ 1,500
Blowers	1,400
Steam boiler, pipes, valves, stack	3,000
Collecting belts (two)	1,600
Shredding machinery	500
Dryer, wool compressor, etc.	5,000
Building materials	10,000
Labor	8,000
Power and water	1,000
Miscellaneous	6,000
Total	$38,000

With coke as fuel at $4 to $5 per ton they estimate it possible to produce rock wool at approximately $20 a ton, including all costs. With development of the art and study of possible fuel economies it should be possible to lower this cost considerably.

The field of rock wool manufacture offers opportunity for research of the kind that has been applied to portland cement.

Something New in Cement Plant Equipment

The Lang Evaporator at the Redwood City, Calif., Plant of the Pacific Portland Cement Co.

By Edmund Shaw,
Contributing Editor, Rock Products

PACIFIC PORTLAND CEMENT CO., Redwood City, Calif., has a device new to the portland cement industry. It was invented and installed by the chief engineer of the company, A. G. Lang, to meet a peculiar condition. The materials used to make cement are shells and sea mud, which make an excellent cement, but the salt and perhaps other things cause the slurry to thicken to where it will hardly flow, while the moisture is high, around 42%. It cost money to dry out this water in the kiln and filters were tried. They did not produce a sufficiently low moisture content to make filtering pay unless the slurry was hot; and the capacity was limited. So Mr. Lang designed this "evaporator" as he prefers to call it.

It consists of a rotating cylinder in a cylindrical shell and it is set above the combustion chamber of the kiln. The hot gases from the discharge end are led back by a fan and pass between the shell and the cylinder and return through the cylinder. Inside the cylinder is a shaft with beaters, eccentric to the cylinder, and these beaters tear the slurry into pieces which fill the cylinder and are thrown against it. Eventually they are worked out to a discharge that connects with screw conveyors taking the dried slurry to the kiln.

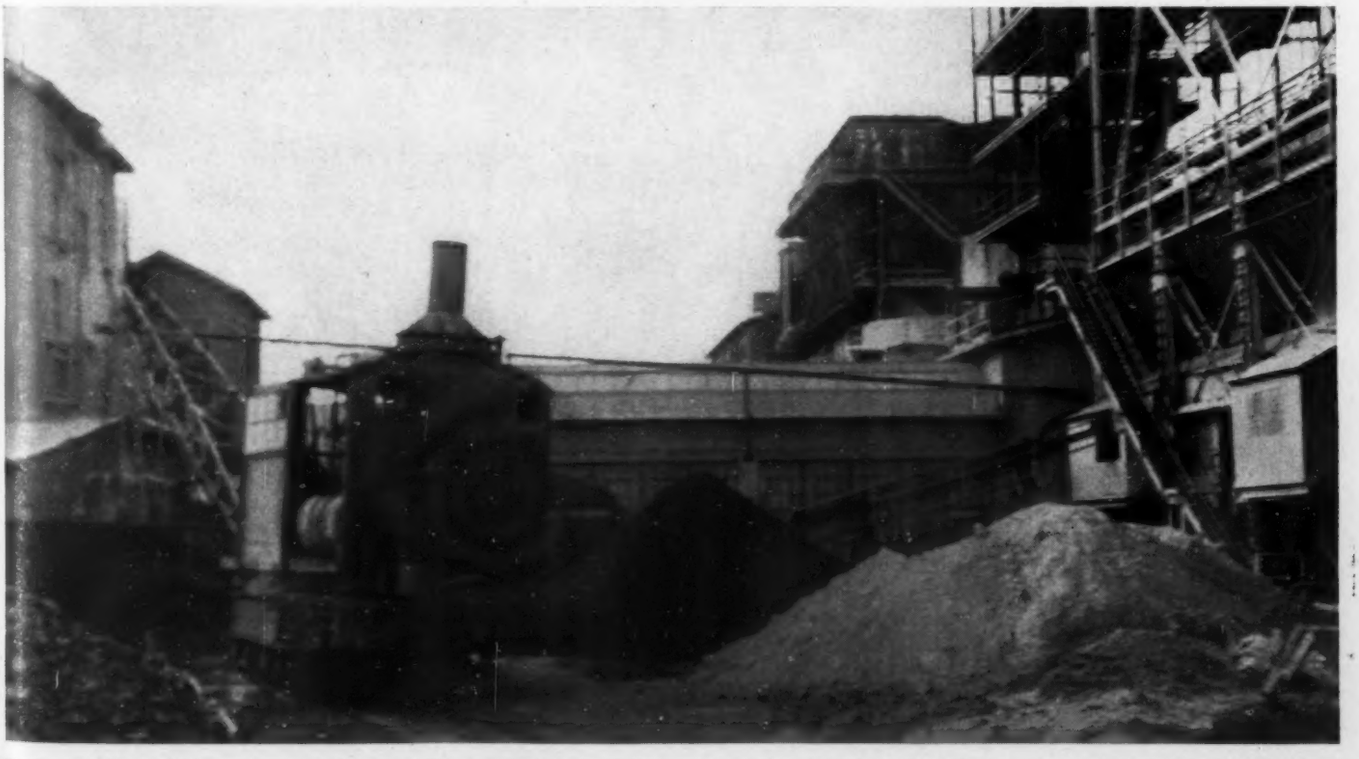
In addition to being a most efficient dryer, the device proved to be an equally efficient dust collector, tests showing that 87% of the solids in the flue gases are collected. The Cottrell precipitates fell from 16 lb. to 8 lb. per cu. ft. and are mostly alkaline salts now.

The slurry is dried down to 17% and any further drying makes it start to dust. The saving in fuel is 20% and the flue gases are reduced from 900 deg. F. to 320 deg. F.

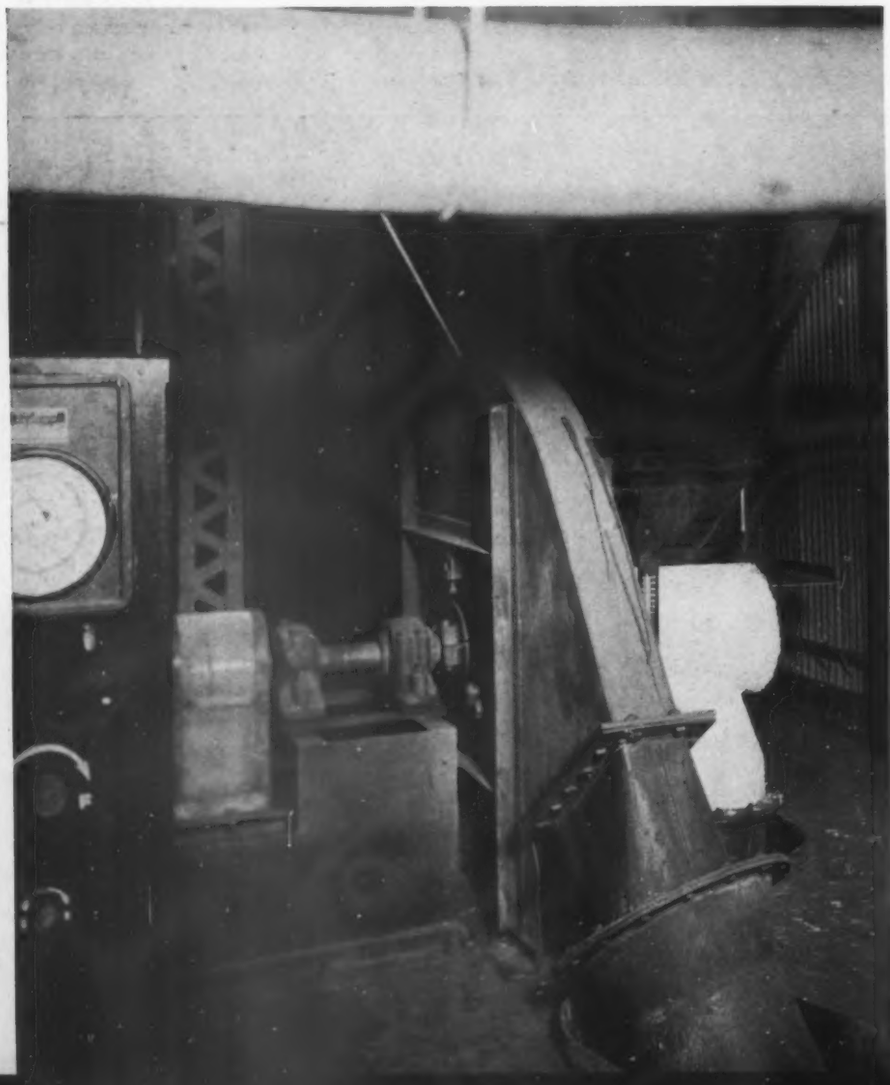
This device interested me greatly as it gives a considerable saving in fuel which will repay the first cost and installation in a comparatively short time. Also it may be the first step toward a greater improvement in fuel saving.

Increases Storage

Idaho Portland Cement Co., Inkom, Ida., is enlarging its storage capacity for both raw materials and clinker. Tentative plans, it is reported, call for resuming production early in February, which is much earlier than usual. Ordinarily the plant is in production during the summer season only, taking care of shipments at other times from storage.



Redwood City, Calif., plant of the Pacific Portland Cement Co., where the Lang evaporator has been installed. This picture shows a crane handling iron ore and other ingredients made necessary by manufacture of special cements

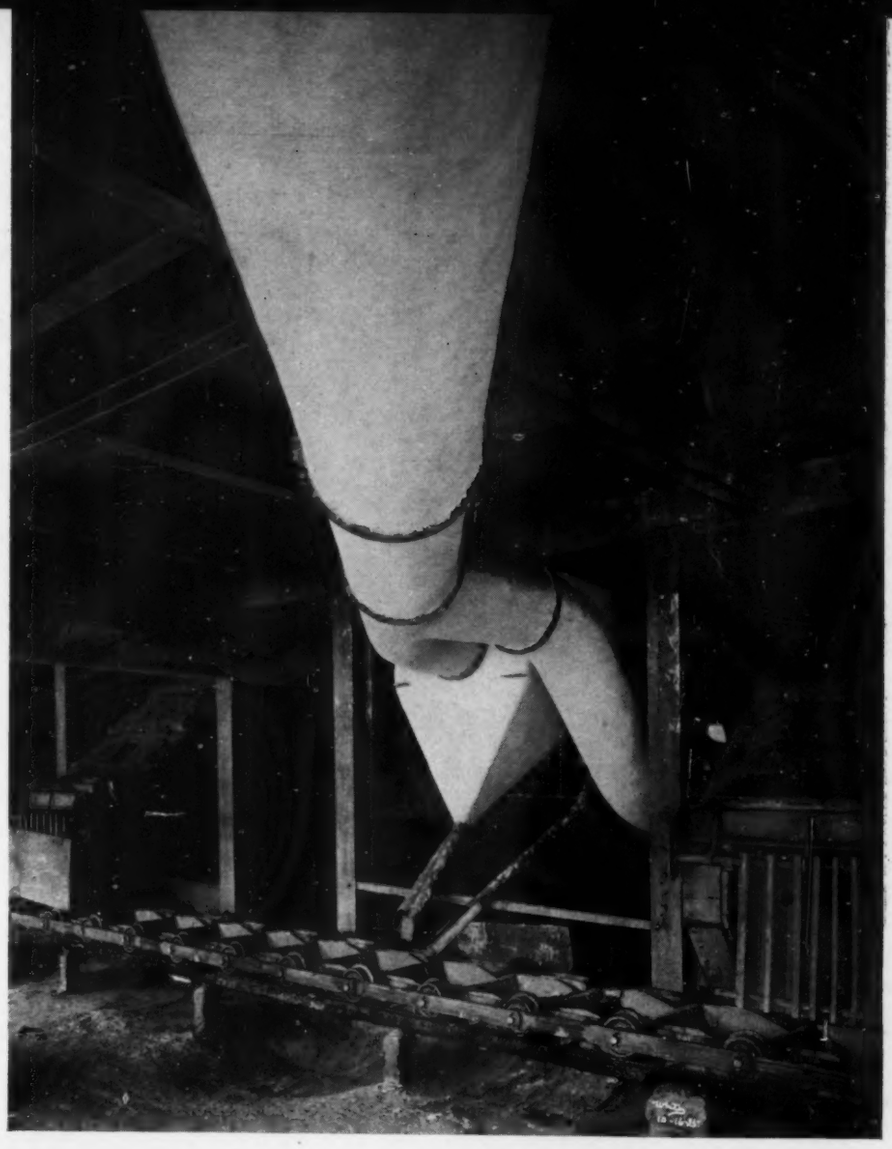


ABOVE—Five of the six single-roll No. 132 Babcock and Wilcox pulverized coal fired units installed at the Oglesby plant of the Marquette Cement Manufacturing Co. in August. One of these units was installed on each of Nos. 1, 2, 3, 4, 5 and 7 kilns. Despite the necessity of extending the mill building out 24 ft. and the resetting of the railroad track in the foreground, the installation was completed in approximately six weeks. The addition of these mills with the present hookups results in a 15% saving in coal

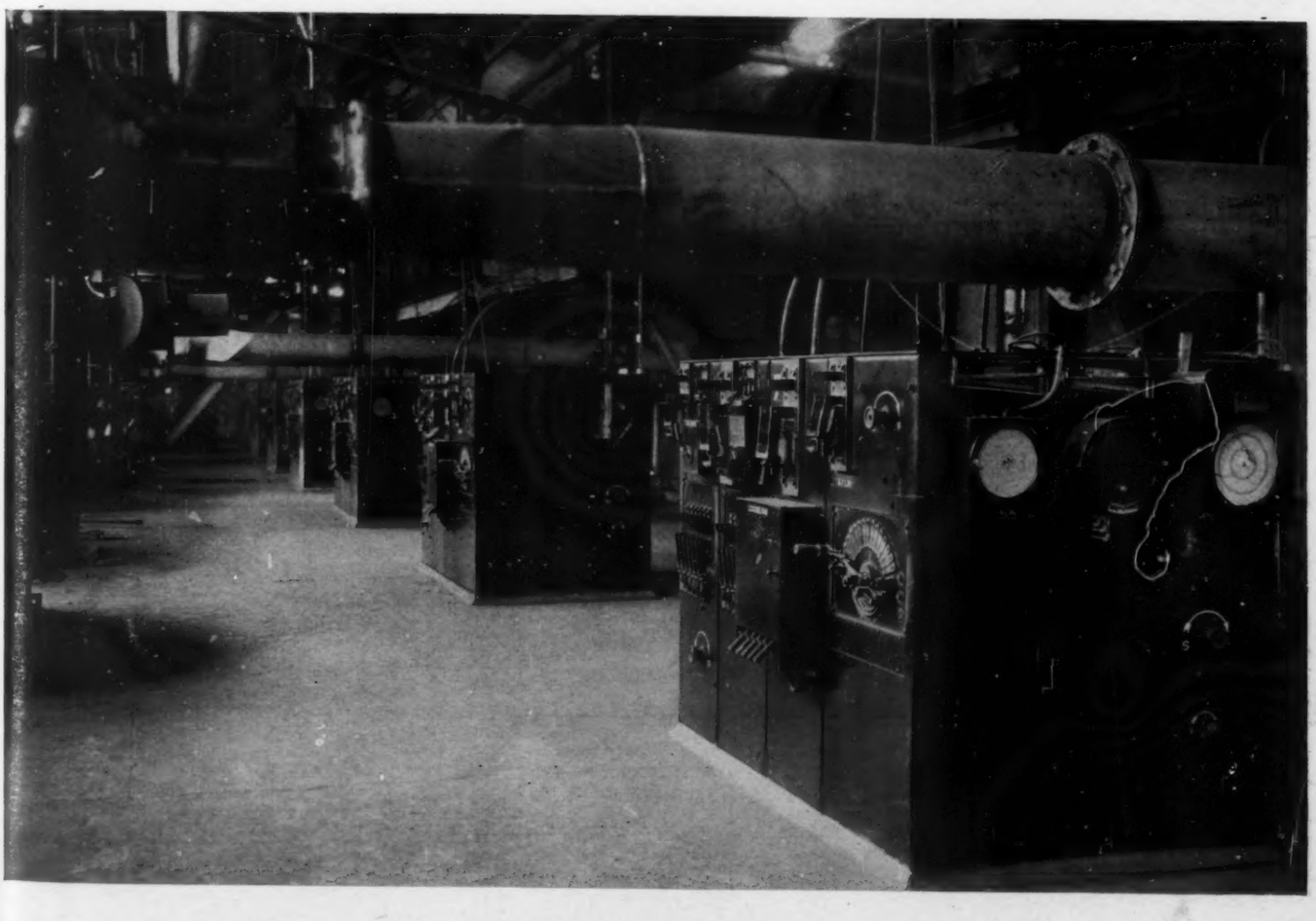
The feed of coal and air is regulated and set so that the coal will be adequately dried out and preheated to give perfect firing, as determined by gas tests. Temperature is maintained at a degree so that after passing the mill it will not exceed 150 deg., to save the rubber couplings in the top of the mill

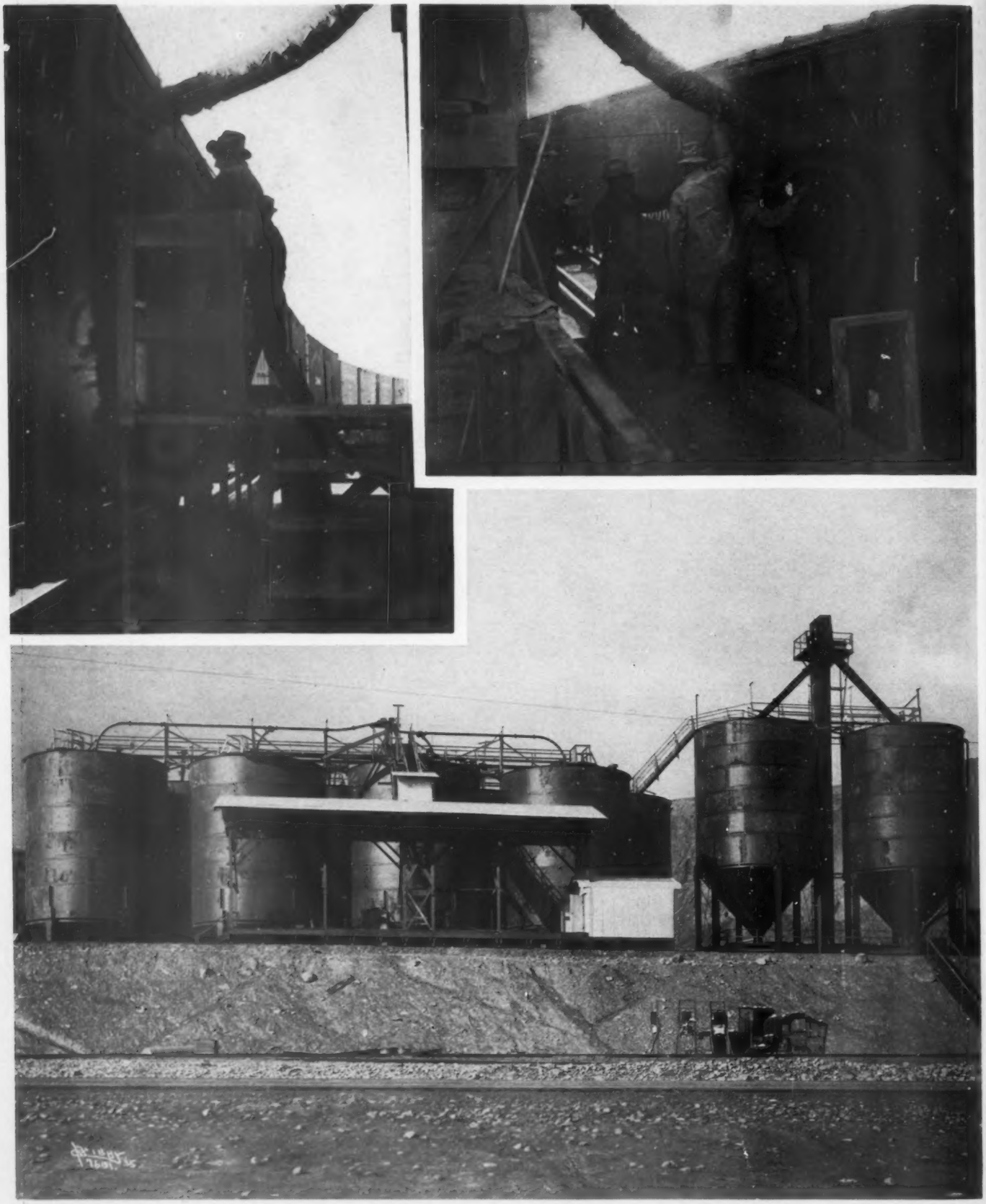
LEFT—This B & W fan, traveling at 1300 to 1600 r.p.m., carries approximately 4000 cu. ft. of heated air to the mill at 425 to 450 deg. F. through the pipe to the right. The thermometer indicates this temperature. When the air is too hot, a butterfly slide on the pipe can be opened to let in cold air. Coal from the bin above passes through a V-6 spiral coal meter to the fan and the mixture of coal and air passes through the inclined pipe through the floor to the mill below. The coal counter records the coal passing through. It is read daily at 7 a. m. Coal used varies in size from 3/8 in. to 1¼ in., the mill being capable of handling all sizes

RIGHT—Dust trap and pipe conducting heated air to the B & W mills. Each unit is equipped with this apparatus. The 16-in. pipe to the right takes clean air at 500 deg. from around the cooler (air jacket). Air, laden with clinker dust, is taken from the Lee cooler at 1000 deg. and passes through the dust trap. The settled dust passes through the spout below to the Meade conveyor. The weight of accumulated dust opens the gate on the end of the spout and closes, to preserve the vacuum. A valve on each pipe permits mixing of the air from the two sources to give the desired temperature of 425 to 450 deg. to the pulverizer from the fan. Approximately 4000 cu. ft. of air per minute passes to the mill through the larger 18-in. pipe above.

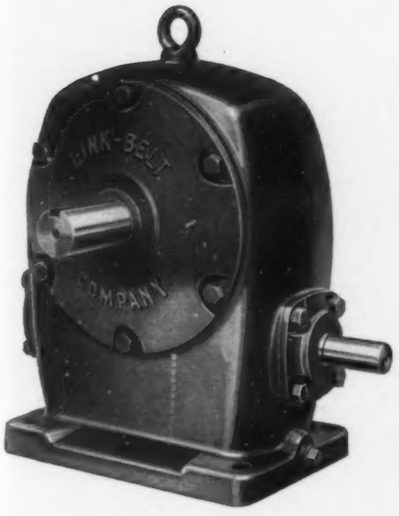


BELOW—Control panels on kiln floor for the B & W mills, kilns and Lee coolers. On the front panel are located starters and controls for the B & W fan, the coal feeder and mill, the Lee cooler motor starter, Lee cooler fan and the kiln. On the side of the panel, to the right, are the automatic coal feed regulators and indicators. The coal burned in this locality contains 18% to 22% of moisture, necessitating a certain setting of the valves at the dust trap to give an air temperature of from 425 to 450 deg. to the pulverizer from the fan. Gas analysis determinations are used to control the setting of the coal feed to the mills. The Bailey meter controller serves to maintain these settings and to indicate the differential of air across the mill

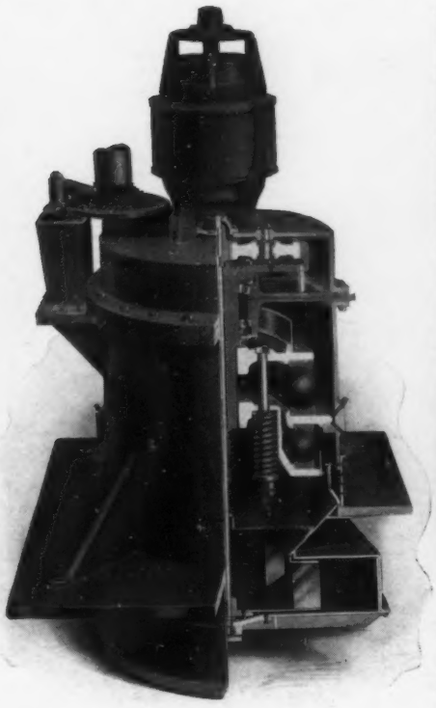




ABOVE—Shipping the first cement for the Grand Coulee dam from the Superior Portland Cement, Inc., mill at Concrete, Wash. BELOW—In the receiving end at Grand Coulee dam site, car unloading bins and blending tanks equipped with Fuller-Kinyon cement pumps

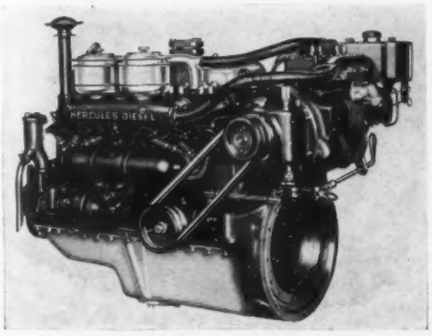


ABOVE: A new line of cut-tooth worm gear speed reducers of simple, compact construction is offered by Link-Belt Co., Chicago, Ill., available in a wide range of ratios and capacities with single or double reduction and in horizontal and vertical types

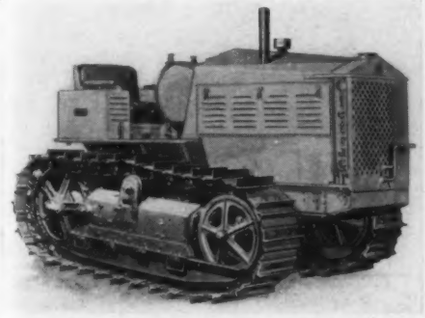


ABOVE: This machine is the new Traylor-Collins pulverizer mill just introduced by Traylor Engineering and Manufacturing Co., Allentown, Penn. This compound vertical ball mill features large capacity, high efficiency and economy of power consumption, according to the manufacturer, and was designed for grinding materials to fine powder. It is roller-bearing equipped and the speed of the grinding balls is low to prevent centrifugal force from exerting destructive impact

ABOVE: A new giant excavating machine built by Bucyrus-Erie Co., South Milwaukee, Wis., uses this dipper which is so large that 52 men can stand inside its top. This machine is entirely electrified with 32 motors to take care of the various functions of moving, leveling, digging and dumping. At each scoop of the 30-yd. dipper, approximately 45 tons of dirt and rock are dug and handled. The dipper capacity, tremendous working range and high speed cycle makes possible profitable open-pit mining where the overburden was prohibitive before. The 950-B is also available as a dragline, and is fully convertible for use with either type of front end equipment

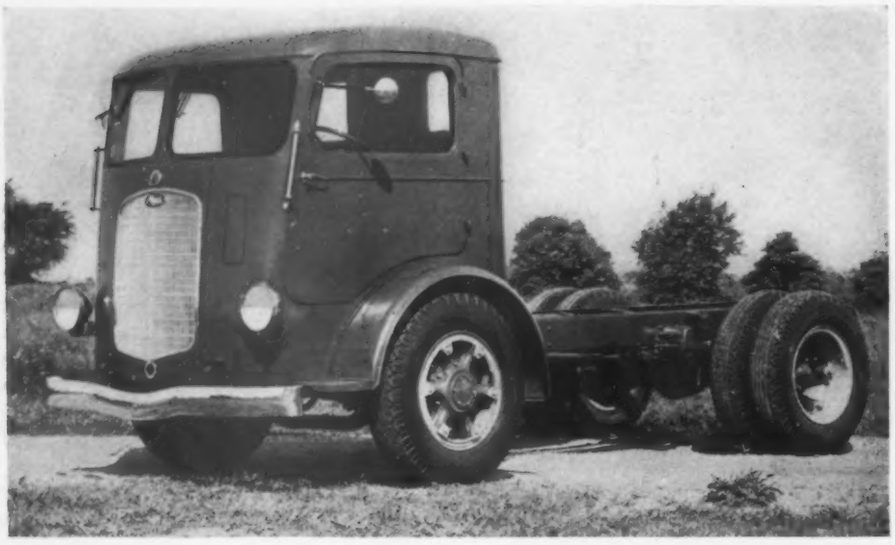


ABOVE: Two 6-cyl. models in the newest series of "DJX" Diesels have been announced by Hercules Motors Corp., Canton, Ohio. The "DJXB" has a 260 cu. in. displacement and is rated at 79 h.p. and the "DJXC" is rated at 288 cu. in. displacement and 82.5 hp. This newer series is interchangeable with the Hercules "JX" series of gasoline engines and has been developed for use in commercial vehicles and in industrial plants



ABOVE: The new Model 30 Cletrac is designed to develop 33 hp. at the drawbar and 38 belt hp. It is powered by a 6 cyl., 3¾x4¼ engine, has 6 volt starting and ignition units and three forward speeds—1.75, 2.75 and 4.25 m.p.h.

A view of the new portable rock crusher unit developed by the Four Wheel Drive Auto Co., Clintonville, Wis. An overhead eccentric type rock crusher is driven by the truck motor of a 3-ton FWD truck. The rated capacity is 50 to 125 tons per day for this unit.

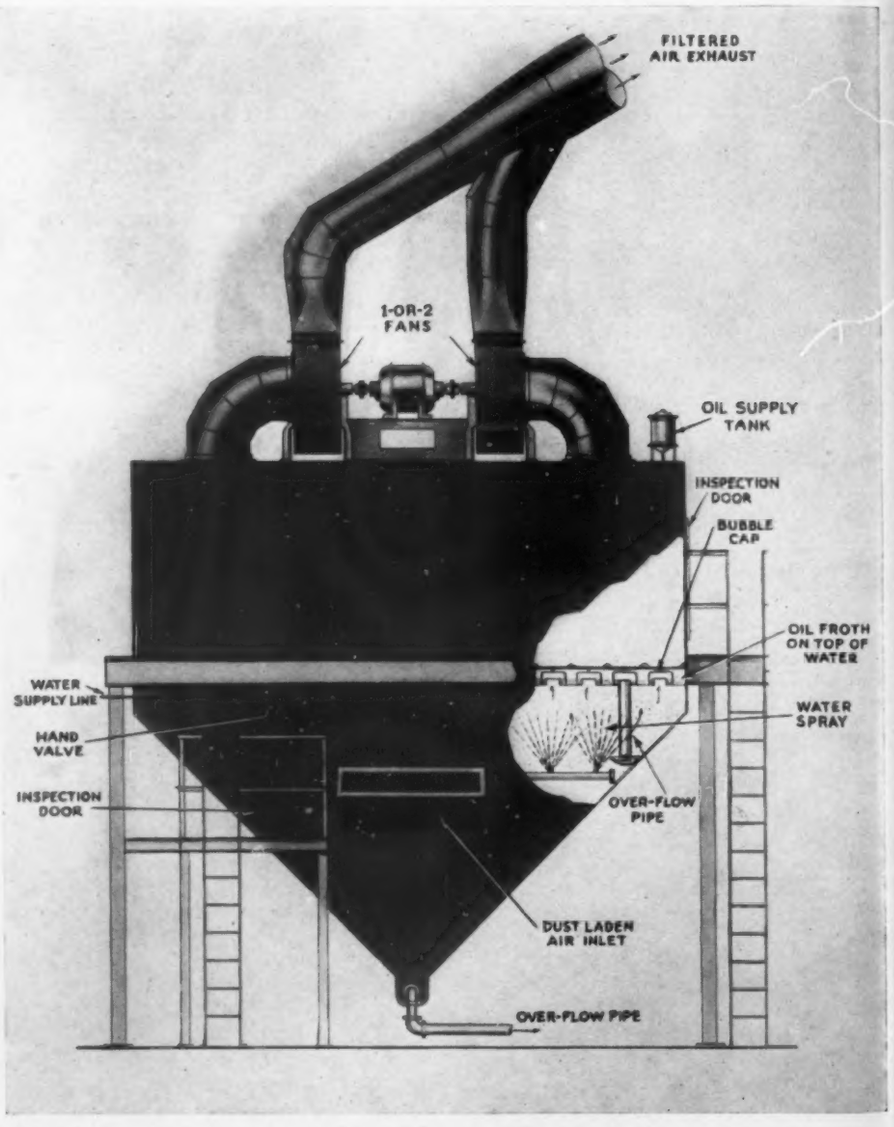


This modernly-styled CH traffic type truck recently placed on the market by Mack Trucks, Inc., features the cab over the engine and the roll-out power plant, which permits the withdrawal of the power plant as a unit through the front to provide greatly increased engine accessibility

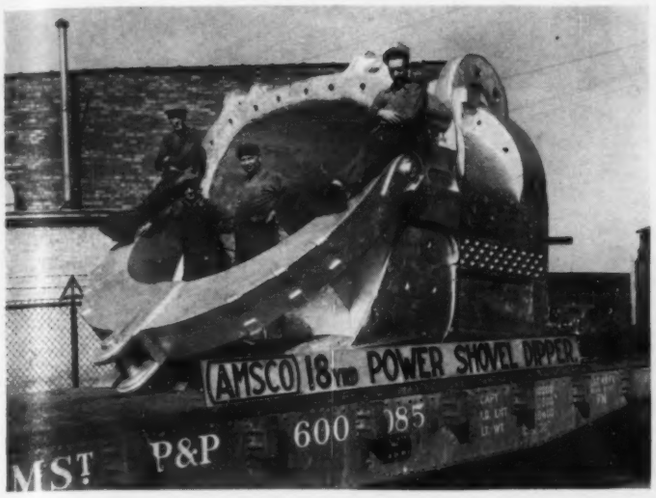
This Robins Style F portable conveyor can be furnished in 14 to 18 in. widths and in 20, 25, 30, 35 or 40 ft. lengths driven either by a.c. or d.c. motor or gas engine. Capacities from 50 to 70 tons per hour are claimed for any material weighing 50 lb. per cu. ft.

ABOVE: The SA type pillow block is a new addition to the line of transmission appliances of SKF Industries, Inc., Philadelphia, Penn. Advantages claimed for the pillow block are high capacity, self-alignment, simplicity of design, compactness, bearing protection and ease of installation

These SKF spherical roller bearings, when used with the SA type pillow block, have the inherent ability of rolling self-alignment without imposing extraneous loads due to setup inaccuracies or shaft deflections



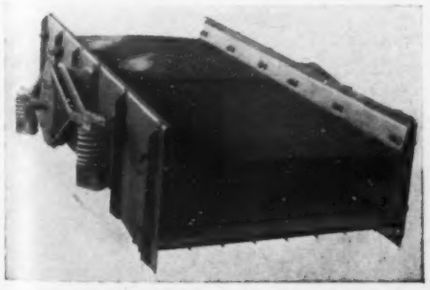
This dust collector is designed by The C. O. Bartlett and Snow Co., Cleveland, Ohio, for a minimum of floor space and economical operation. It can be supplied in sizes ranging from 1000 cu. ft. machines to those capable of handling 35,000 cu. ft. per minute



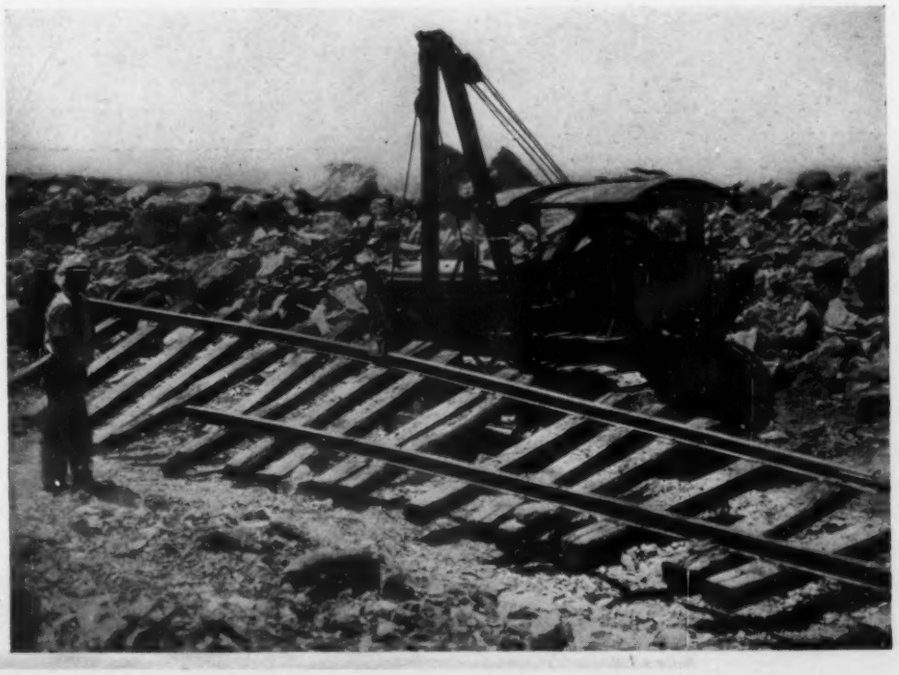
View of 18 cu. yd. light weight Amsco renewable lip dipper, constructed entirely of manganese steel castings, except the bail, which is of all-welded high tensile steel construction

This model GE-15 heavy duty truck is manufactured by Easton Car and Construction Co. for use in rock excavation and in coal stripping. Heaped capacity, including 14 in. side boards, is 16 cu. yd.

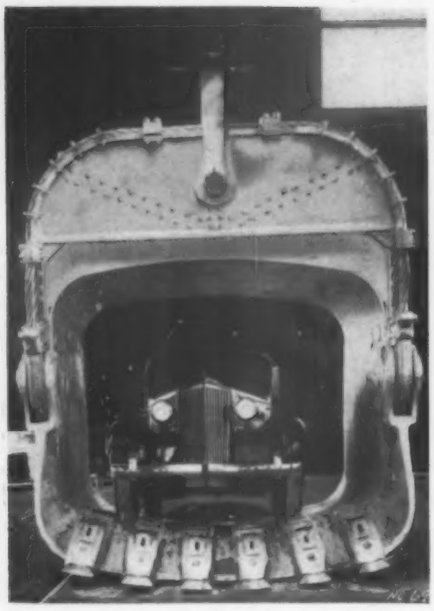
LEFT: Century 15-hp. SCH motor and Falk 34 DU reducer driving conveyor belt at Norris Dam. RIGHT: Robins "Gyrex" rock screen driven by 7½-hp. Century motor at the TVA project



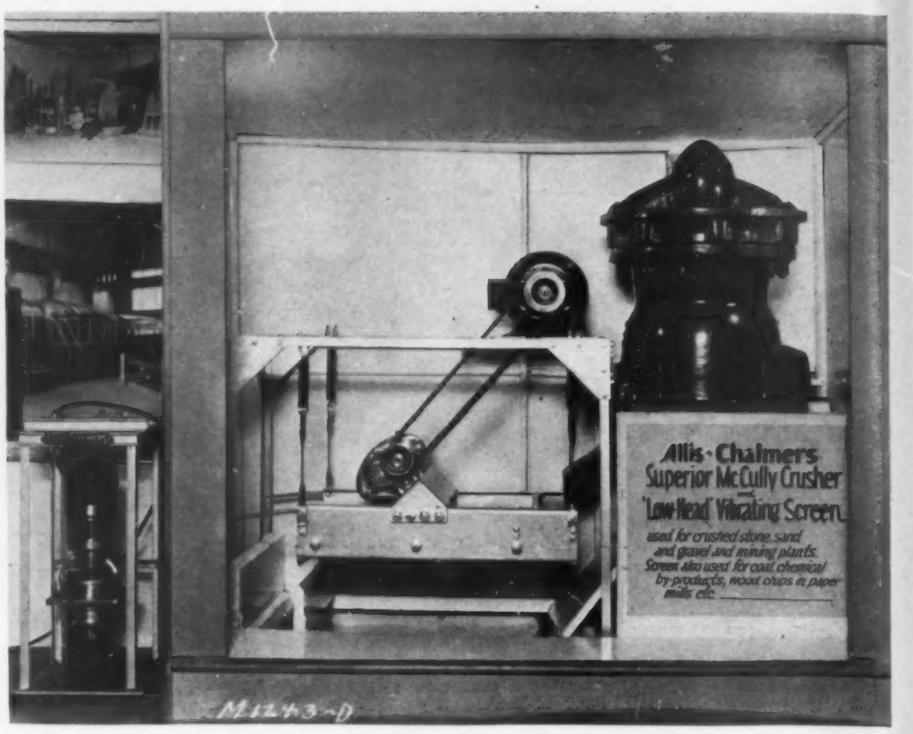
ABOVE: This Robins "Vibrex" screen for accurate sizing of fine materials is obtainable in 3 and 4 ft. widths and in lengths of 6½ and 8½ ft. with single or double deck or 10 ft. long in single deck only. The location of the vibrator at the center of gravity of the screen frame insures uniform circle-throw motion of the entire live frame and screening surfaces, it is claimed



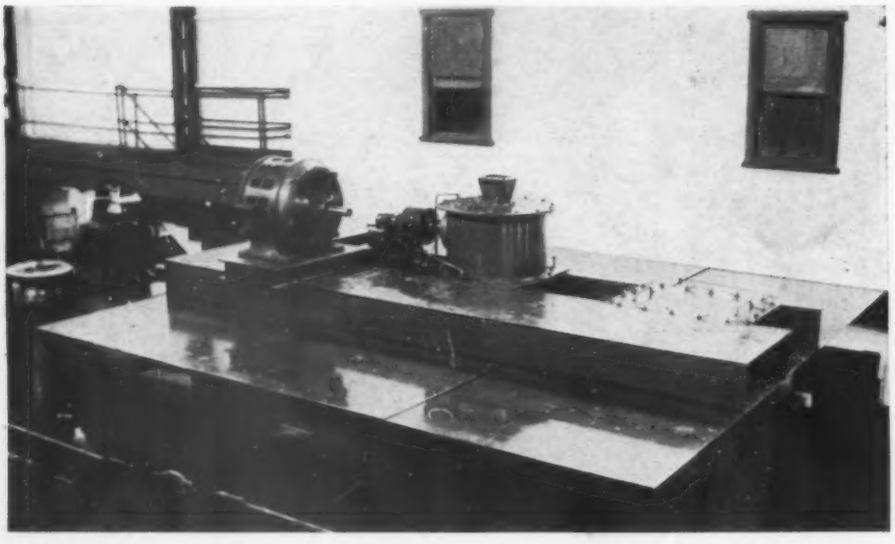
RIGHT: Equipped with a side boom, a Caterpillar Diesel tractor serves as a real "handyman" in this quarry near Syracuse, N. Y. This view shows the outfit shifting railroad loading tracks after a blast



This 32 cu. yd. (level full) power shovel dipper was designed by the Marion Steam Shovel Co. and is now in operation on the Northern Illinois Coal property near Wilmington, Ill.


Allis-Chalmers
Superior McCully Crusher
'Low-Head' Vibrating Screen
used for crushed stone, sand and gravel and mining plants. Screen also used for coal, chemical by-products, wood chips in paper mills etc.
M1243-D

This working model crushing and screening unit won first prize for the Allis-Chalmers Manufacturing Co. at the Wisconsin Industrial Exhibition



ABOVE: Two of these 16 ft. Bradley air classifiers have recently been installed in the Richard City, Tenn., plant of the Pennsylvania-Dixie Cement Corporation for use on the clinker grinding end of the cement plant. These separators were designed especially for the company and employ a square top in order to utilize the top section of these separators for a walk-way about them.

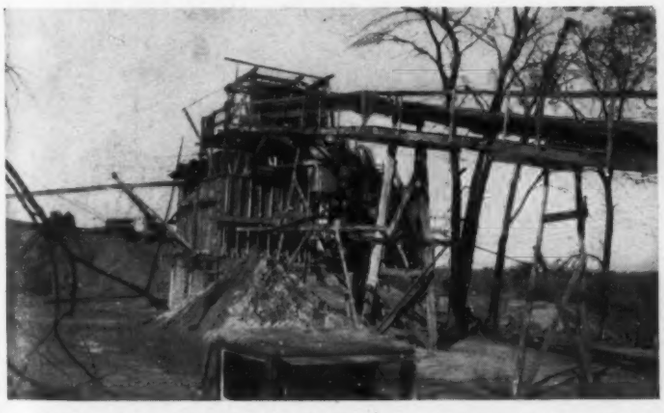
New light-weight, high capacity re-handling bucket announced by Robins Conveying Belt Co.

RIGHT: View of the fan mechanism of one of the separators with the top removed

Sand Classifier Installed in Small Operation

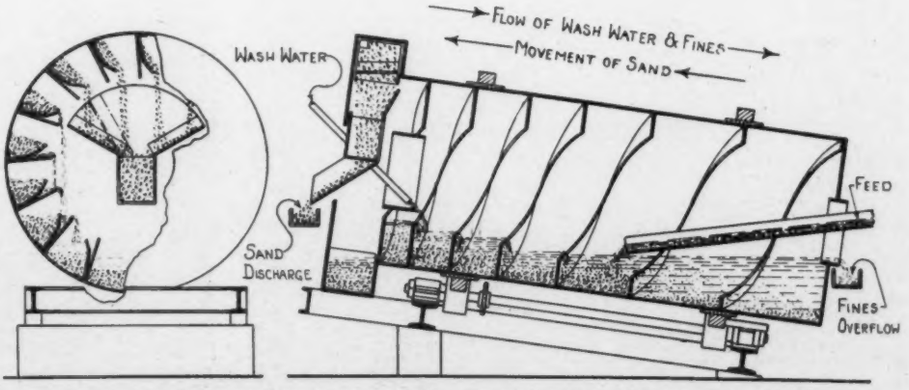
An interesting application of a classifier has been recently made in the sand plant of the Allied Supply Co. near Friendsville, Ohio. Sand and gravel is reclaimed from the pit by means of a drag line scraper and the material passing a vibrating screen with 1-in. square mesh plus the crushed oversized gravel is carried by belt conveyor to the top of the sizing and washing screen. After passing over a vibrating screen with ½ in. square mesh, the undersize is washed into a 3 ft. diameter by 8 ft. long Hardinge counter-current classifier set at a slope of 1 in. to the foot. The classifier operates at a speed of 7 r.p.m. and is driven through a Reeves varispeed drive from a ¾-hp. motor. Approximately 75 gal. of water per minute is used in washing and classification, about half of this amount being added as a counter current wash at the bucket or sand discharge end. About 2 per cent clay and silt is in the material retained on a 100-mesh sieve and 4.5 per cent in the minus 100-mesh material. The primary purpose of this classifier is to remove the silt and clay to produce a clean concrete sand passing Ohio State Highway specifications. The capacity on concrete sand is 14 cu. yd. per hour and impurities are reduced to approximately 2 per cent. By de-sliming the overflow from the classifier in a cone classifier, it was found that 1½ cu. yd. of minus 14-mesh mason sand could be made at the same time. The machine consists primarily of a drum, mounted on tires, and bearing wheels mounted on longitudinal shafts which rotate in bearings mounted on a structural steel base. Spiral flights of varying heights are attached to a removable steel lining on the inside of the drum, and convey the settled sand to the bucket end. Closer spacing of flights at the bucket end tend to squeeze the material and deliver a drier discharge. The drum is driven by traction of the bearing wheels against the tires, and the bearing wheel shafts are in turn driven by a sprocket and chain drive from a speed reducer connected to the motor through a variable speed drive

Overflow end of counter-current classifier. This overflow, when de-slimed, produces a very satisfactory mason sand



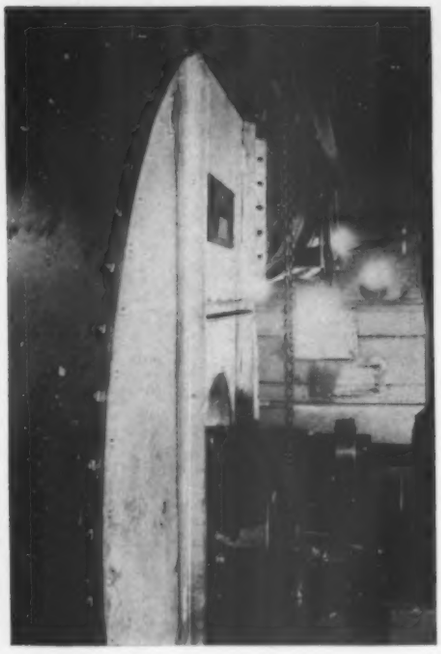
LEFT: Plant of the Allied Supply Co. illustrating how the sand and gravel is conveyed to the top of the sizing and washing plant. RIGHT: The 3-ft. diameter counter-current classifier in working position

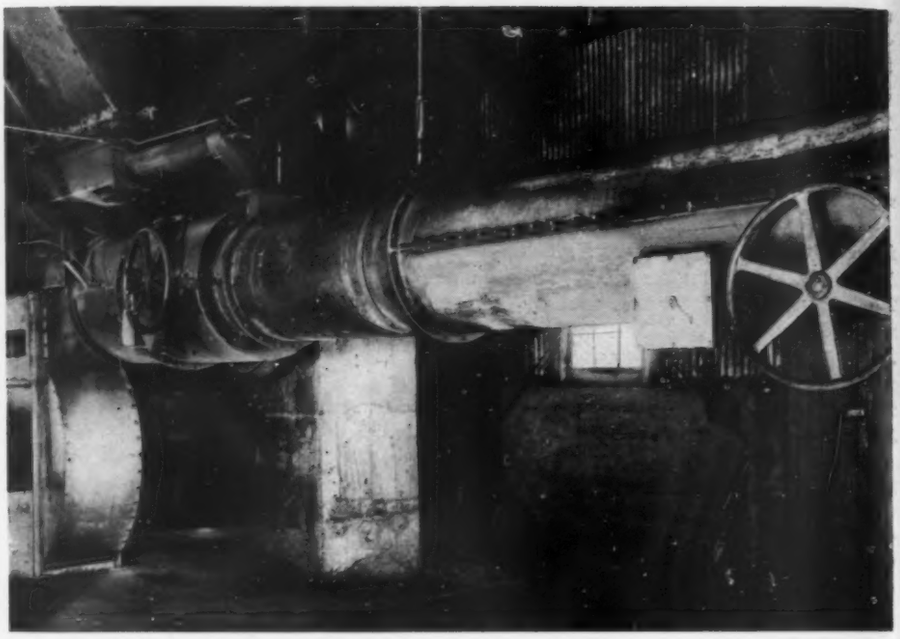
The feed is delivered into the classifier by means of a pipe or launder inserted into the overflow or fines discharge end at a point about 2½ ft. from the overflow end. Clean water for the counter current washing is added at the bucket end and flows toward the lower or overflow end, floating off the fines and impurities at that end. The material is turned over constantly in the drum in front of the flights, exposing each particle to the counter—current flow of the water entering the bucket end, giving a partial scrubbing action



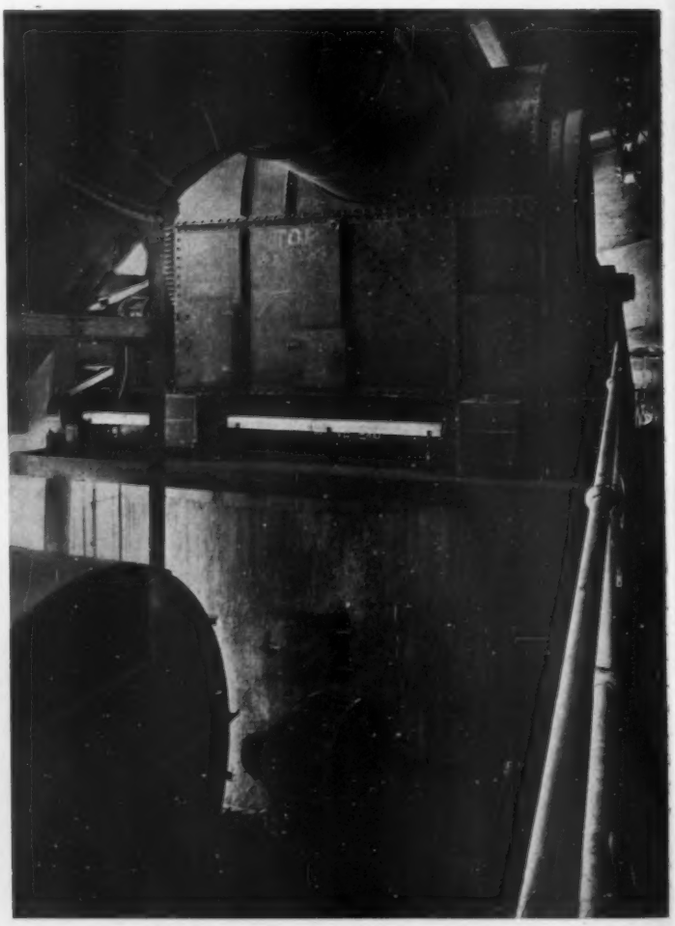
Longitudinal cross-section of the Hardinge counter-current classifier

RIGHT: View of the Traylor-Cheesman patented burner which is adaptable for pulverized coal, gas or fuel oil. It is claimed that all of the heated air from the clinker cooler supplies from 70 to 90 per cent of the total quantity of air required for complete combustion of the kiln fuel. BELOW: Looking toward the blower from the side

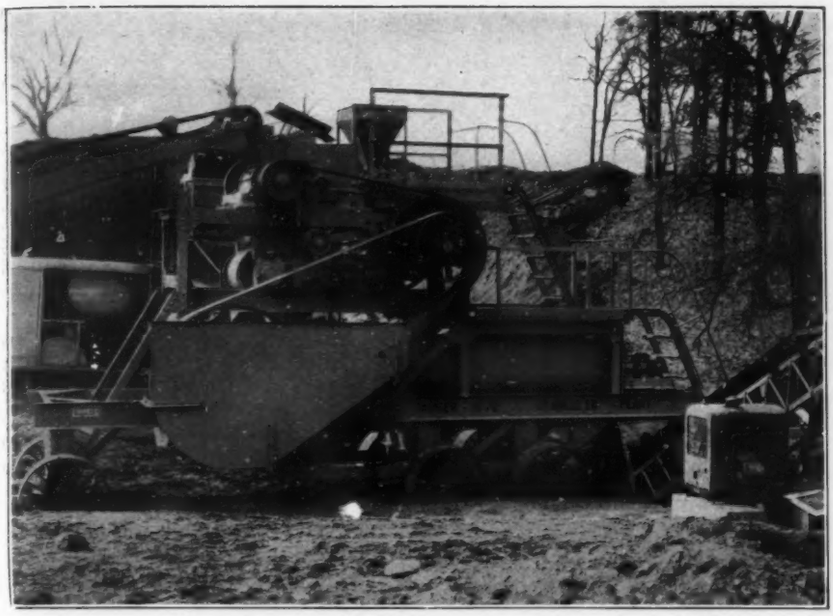




The Traylor-Cheesman patented rotary clinker cooler and the Traylor-Cheesman patented burner were designed by Traylor Engineering and Manufacturing Co., Allentown, Penn., to be used in combination to give high efficiency in clinker cooling and fuel consumption. It is claimed, from results of recent installations, that fuel consumption is cut down materially, that kiln capacities are increased from 10 per cent to 40 per cent, and that easier grinding, longer life of the kiln lining and improvement in the quality and color of finished cement are brought about

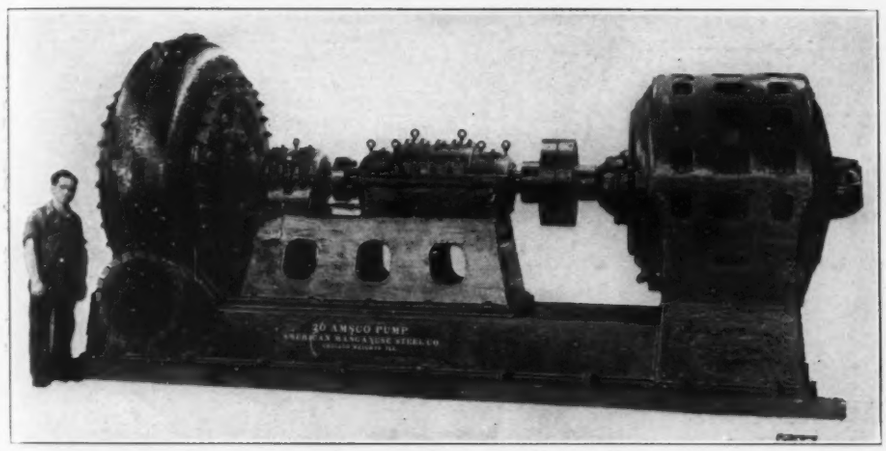


Front and back views of the Traylor recuperator. It is claimed that the cooler reduces clinker to within 100 deg. of atmospheric temperature with utilization of the heat recovered for combustion

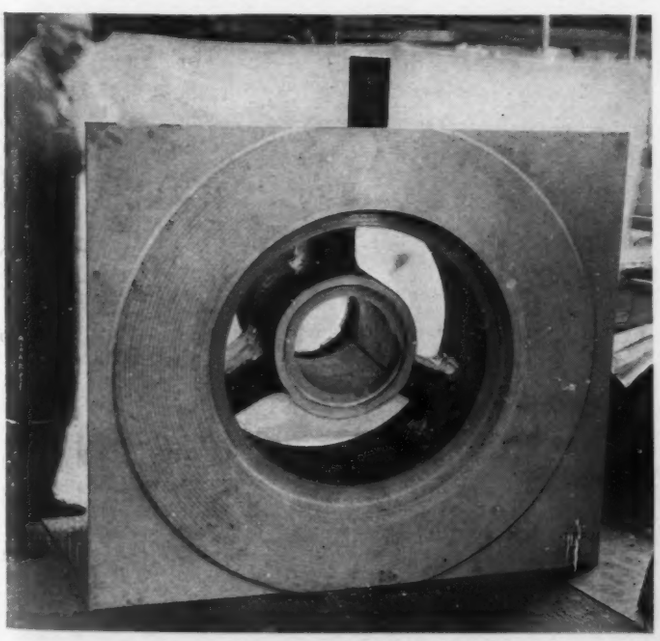


The Pioneer portable gravel clay stabilizer plant above was introduced recently to be used in conjunction with a crushed gravel plant to prepare and mix materials for stabilized wearing courses

ABOVE: Three new Lorain models announced by The Thew Shovel Co., Lorain, Ohio. The L-87, built throughout to Thew center drive design, features a 24-ft. shovel boom which is virtually two booms in one. The new L-55D is built with a longer turntable, with a 19-ft. shovel boom, and is mounted on a heavier crawler, 12 ft. 3 in. long. The L-40 will be mounted on an Indiana truck, three-axle type, with 10 pneumatic tires

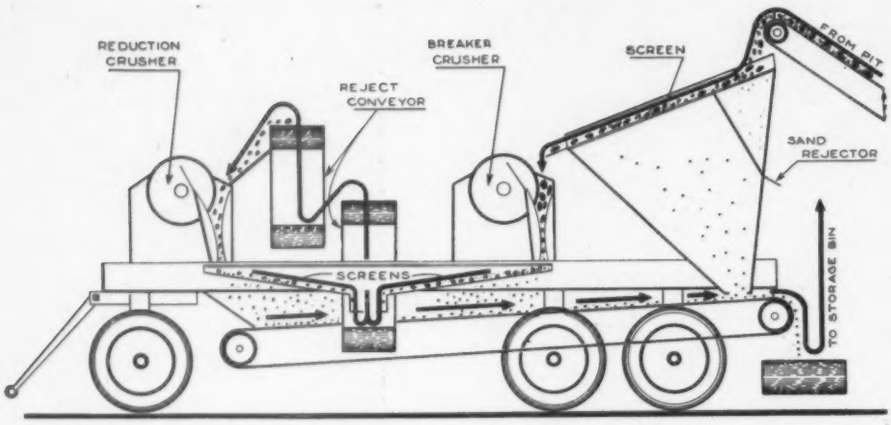


ABOVE: This extraordinarily large 20-in. Amsco dredge pump was built especially for the Arthur A. Johnson Corp., to be used in building dams and dikes hydraulically for the Quabbin Reservoir to serve the Boston Metropolitan district



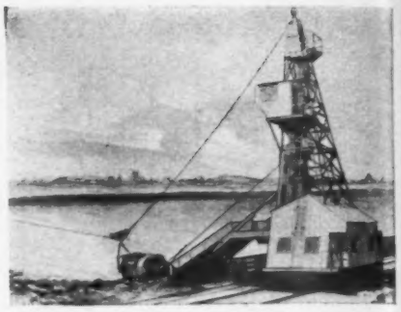
LEFT: Bottom view of Allis-Chalmers Newhouse crusher, showing new alternative design of bottom shell, to permit the discharge of the finished product directly through the bottom

BELOW: This Cradledump buggy (announced by R. G. Le Tourneau, Inc., of Peoria, Ill., and Stockton, Calif.) is a new earthmoving carrier of 30-cu.-yd. capacity, built for use with large-size tractors, and without the front axle, for use with trucks as a semi-trailer

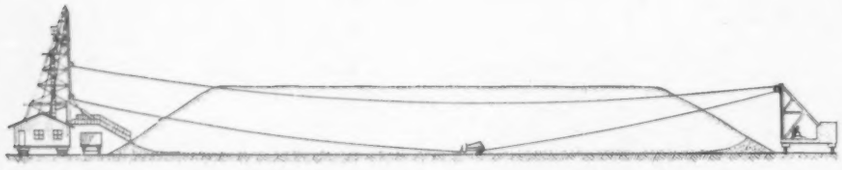


FLOW DIAGRAM OF KNIPPEL DUPLEX PORTABLE CRUSHING SCREENING AND LOADING PLANT

The portable plant shown above was built and patented by Hank Knippel of the Western Construction Co., Inc., Pocatello, Idaho. Accessibility to all parts, compliance with all state laws, and absolute freedom from vibration while running, are features claimed by the builder. The patent is offered for sale

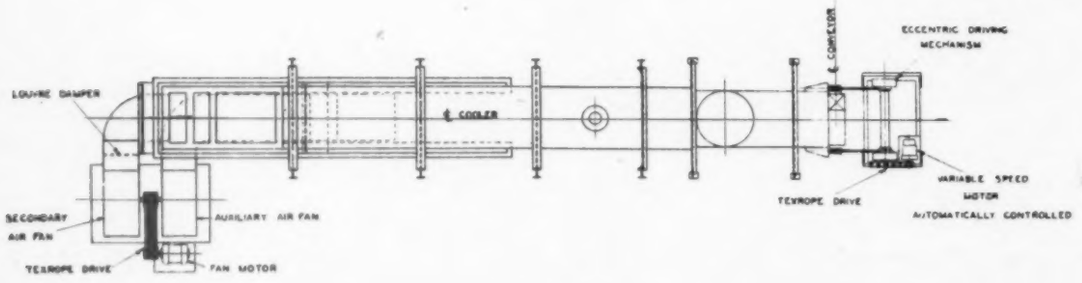


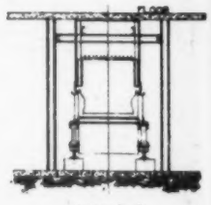
***ABOVE:** A new type of Sauerman tower machine, applicable to any pit excavation, stripping or storage problem, for handling large tonnage, was announced during the past year by Sauerman Bros., Inc., Chicago, Ill. The illustration above shows the tower machine as used for stripping overburden or excavating from dry pit and reloading to cars or belt conveyor*

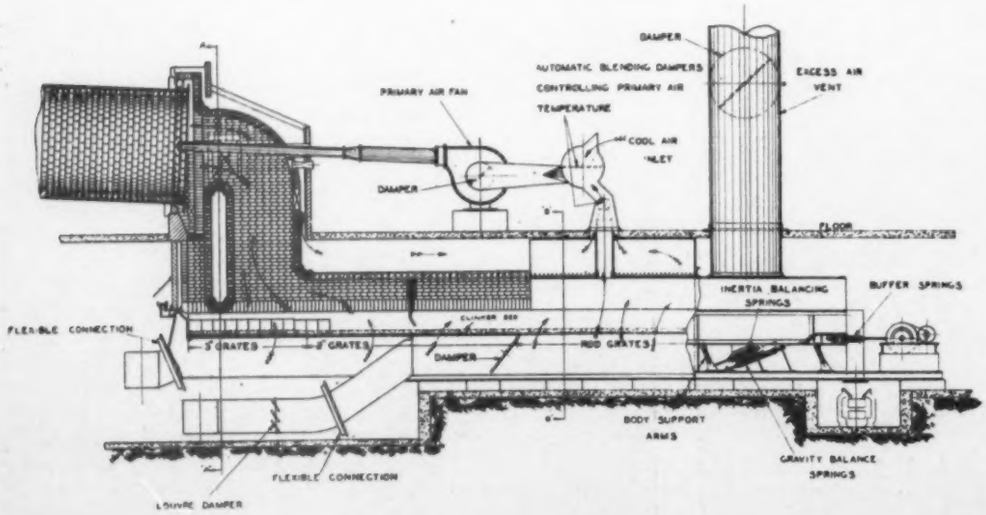


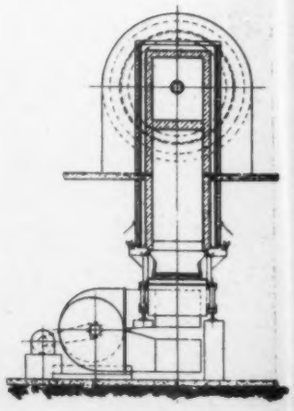
Elevation sketch of Sauerman tower machine as applied to storage of bulk materials on large ground area. The pile may be any width up to 1000 ft., and any length. The ramp can be raised or lowered hydraulically

***BELOW:** These two Allis-Chalmers clinker coolers, incorporating a number of new features, are now being installed in a South American cement plant. Dual cooling air fans supply the air requirements. One fan supplies secondary air for combustion, while the other fan furnishes a relatively large volume of low-pressure air, to remove the heat remaining in the clinker after completion of the quenching and recuperation process. The secondary and quenching air supply is arranged for automatic flow and pressure regulation, while the primary air supply is arranged for both automatic flow and temperature control*









Crushed Stone Association Plans Full Four-Day Program

THE 19TH ANNUAL MEETING of the National Crushed Stone Association at the Jefferson Hotel, St. Louis, Mo., January 27-30, inclusive, will open Monday morning, January 27, with the usual program of the president's address, followed by reports on business conditions in the industry throughout the country by the eight regional vice-presidents.

A. T. Goldbeck will review the work and progress of the Association's Bureau of Engineering during its entire history of the last ten years. After this the rest of the morning session will be devoted to routine business. At a get-together luncheon, E. J. Krause, president of the Columbia Quarry Co., St. Louis, will preside, and Harold Williams, Boston, Mass., attorney, will make an address.

Monday Afternoon

Stirling Tomkins, New York Trap Rock Corp., New York City, presiding.

2:30—"New Developments in Concrete Road Design"—Frank Sheets, consulting engineer, Portland Cement Association, Chicago, Ill.

3:15—"Analysis of Association Affairs"—J. R. Boyd, secretary, National Crushed Stone Association.

4:00—General Discussion.
(To develop industry opinion concerning the future policies and activities of the National Crushed Stone Association. Ample time has been allowed for a full and frank expression of thought on this vital question. Every member present is urgently requested to participate.

Monday Evening

6:00—Informal reception by the Manufacfacturers' Divisions of the National Crushed Stone Association and the National Sand and Gravel Association to all in attendance at the convention. The reception will be followed immediately by a buffet supper at nominal cost.

7:30—Formal opening of the joint exposition of the Manufacturers' Divisions.

Tuesday

H. E. Rodes, Franklin Limestone Co., Nashville, Tenn., presiding.

10:00—Symposium—"Stabilized Roads."
a. "Using Calcium Chloride"—B. C. Tiney, chief engineer, Calcium Chloride Association," Detroit, Mich.

10:20—b. "Using Salt"—Dr. C. D. Looker, International Salt Co., Ithaca, N. Y.

10:40—c. "Using Bituminous Materials"—F. V. Reagel, engineer of materials, Missouri State Highway Department.

11:30—"Planning for Future Highways"—H. S. Fairbank, chief division of information, United States Bureau of Public Roads, Washington, D. C.

Wednesday

The sessions on Wednesday are devoted to the Mineral Aggregates Institute, which is composed of three members—the National Crushed Stone Association, the National Sand and Gravel Association, and the National Slag Association. The details of the program are given on page 74 of this issue of ROCK PRODUCTS, in the article on the National Sand and Gravel Association's program.

Wednesday evening there will be a dinner dance for the members of all three associations.

Thursday

MORNING SESSION

Russell Rarey, President, presiding.

10:00—"Presentation of Awards for National Crushed Stone Association Safety Contest"—John W. Finch, director, United States Bureau of Mines, Washington, D. C.

10:30—Remarks of Acceptance—A. J. Cayia, general superintendent, Inland Lime and Stone Co., Manistique, Mich., winner of the contest.

10:45—"Advantages of Large Size Aggregate for Mass Concrete"—P. C. Powers, assistant to the director of research, Portland Cement Association, Chicago, Ill.

11:30—Business meeting.
a. Report of auditing committee.
b. Report of resolutions committee.
c. New business.

11:45—Report of nominating committee and election of officers.

12:00—Greeting of President-Elect.

AFTERNOON SESSION

2:00—Meeting of newly elected Board of Directors.

EVENING SESSION

7:30—Joint dinner, Boards of Directors of the National Crushed Stone Association, National Sand and Gravel Association,
National Slag Association.
To be followed by joint meeting of the three Boards of Directors.

Housing Featured at P.C.A. Meeting

APPROVAL of a plan to organize the more than thirty thousand employes and executives of the cement industry into "Minute Men," to work for a reduction in motor vehicle accidents, was the climax of the closing business session of the thirty-third annual meeting of the Portland Cement Association, December 11. More than two hundred member company executives and guests attended the formal banquet at the Blackstone Hotel which followed the closing session.

High spots of the meeting were addresses on housing by H. A. Sawyer, of New Orleans, vice-president of the Lone Star Cement Corp., Frank Watson, director of the Purdue Housing Research Foundation, and W. G. Kaiser, manager of the Cement Products Bureau of the Portland Cement Association, and a defense of capitalism by E. J. Mehren, president of the Association.

Officers and directors who will guide the affairs of the Association during 1936 were elected at the closing session. The following officers were re-elected: Edward J. Mehren, president; William M. Kinney, vice-president, secretary and general manager; B. F. Affleck, president of the Universal Atlas Cement Co., treasurer.

Directors for 1936 are: M. Moss Alexander, of the Missouri Portland Cement Co., St. Louis; Adam L. Beck, of the Great Lakes Portland Cement Corp., Buffalo; Coy Burnett, of Monolith Portland Cement Co., Los Angeles; W. A. Davis, Standard Portland Cement Co., Cleveland; Chas. L. Hogan, International Cement Corp., New York; J. B. John, Medusa Portland Cement Co., Cleveland; E. P. Lucas, Superior Portland Cement, Inc., Seattle; F. G. McKelvy, Alpha Portland Cement Co., Easton; J. D. Johnson, Canada Cement Co., Ltd., Montreal; M. C. Monday, Cumberland Portland Cement Co., Knoxville; John J. Porter, North American Cement Corp., New York; A. J. Rooney, Huron Portland Cement Co., Detroit; Blaine S. Smith, Pennsylvania-Dixie Cement Corp., New York; S. W. Storey, Florida Portland Cement Co., Chicago; F. E. Tyler, Dewey Portland Cement Co., Kansas City; R. S. Weaver, Allentown Portland Cement Co., Catasauqua; W. A. Wecker, Marquette Cement Manufacturing Co., Chicago; Joseph S. Young, Lehigh Portland Cement Co., Allentown.

Adds New Jersey Plant

United States Gypsum Co., Chicago, Ill., has obtained a 50-year lease on the National Asbestos Co. property at South Cove, Jersey City, N. J., for shipping and distributing terminal. The deal was made contingent upon the company's agreement to employ nothing but local labor on the $1,000,000 project.

The property covers an area of 137,000 sq. ft., and was leased at 5¾c a sq. ft. a year, with provision for adjustment of this rate either up or down at the end of twenty years, not more than 20%, either way.

Work on the construction was expected to start immediately, according to officers of the company, and will employ between 500 and 600 men. About 200 have been employed on the spot by the National concern, which had held the site on a 99-year lease with a clause that the city could reclaim it on one year's notice by reimbursing the lessees for the value of property erected on it.

Big New Contract

Ohio River Sand and Gravel Co., Parkersburg, W. Va., which about a year ago received a contract for 2,200,000 tons of sand and gravel for the Tygart River dam project, was recently awarded a new contract for a like amount for reservoir dams near Grafton, W. Va.

Contracts for Concrete Plant

Tennessee Valley Authority, Knoxville, Tenn., has let contracts to the Barber Green Co. and the B. F. Goodrich Co. for conveying equipment for a new concrete mixing plant at Pickwick dam site.

New Plant

Perry Lime Rock Co., Perry, Ga., is building a new crushing plant three miles south of Perry. The organizers of the company are J. Meade Tolleson, Perry, and Mel A. Smith, Orlando, Fla. They expect to be in production in January, 1936.

RECENT QUOTATIONS ON ROCK PRODUCTS SECURITIES

Stock	Date	Bid	Asked	Dividend
Allentown P. C., com.[47]	12-26-35	4	6	
Allentown P. C., pfd.[47]	12-26-35	5	7	
Alpha P. C., com.	1- 6-36	20⅞	21¾	.25 Jan. 25
Amalgamated Phos. 6's, 1936[47]	Called for payment			
American Aggregates, com.[48]	12-11-35	1	2	
American Aggregates, pfd.[48]	12-11-35	3	6	
American Aggregates, 6's 1st mtg. 3/6's, 1943, new bonds[48]	12-11-35	45	....	
American Aggregates, 6's, 1943, old bonds[48]	12-11-35	45	....	
American L. and S., 1st 7's[48]	12-11-35	102	....	
Arundel Corp., com.	1- 6-36	20½ actual sale		.25 Jan. 2
Ashgrove L. & P. C., com.[49]	12-12-35	11¼	....	
Ashgrove L. & P. C., pfd.[49]	12-12-35	95	....	
Bessemer L. and C., Class A[47]	12-26-35	3	4	
Bessemer L. and C., 1st 6½'s, 1947[48]	12-11-35	44F	....	
Bessemer L. and C., cert. of dep., 1947[48]	12-11-35	54	58	
Boston S. and G., new, com[27]	12-11-35	1	2	
Boston S. and G., new 7%, pfd.[27]	12-11-35	6	8	
Boston S. and G., 7's, 1939[47]	12-11-35	70	....	
Calaveras Cement, com.[49]	12-12-35	4⅛	4¾	
Calaveras Cement, 7% pfd.[49]	12-12-35	71	....	1.00(accum.)Jan.15*
California Art Tile, A[9]	12-13-35	12	13	
California Art Tile, B[9]	12-13-35	2¼	3	
Canada Cement, com.[42]	12-11-35	6⅝	6¾	
Canada Cement, pfd.[42]	12-11-35	59	61	
Canada Cement, 5½'s, 1947[42]	12-11-35	104	104¾	
Canada Crushed Stone, bonds[42]	12-11-35	92	93	
Certainteed Products, com.	1- 6-36	14½	14¾	
Certainteed Products, pfd.	1- 6-36	87½	89	
Certainteed Products, 5½'s, 1948	1- 6-36	97¼ actual sale		
Consol. Cement, 1st 6's, 1950[47]	12-26-35	77	79	
Consol. Cement, A[47]	12-26-35	6	7	
Consol. Oka. S. and G. (Can.), 6½'s[42]	12-11-35	15	25	
Consol. Rock Products, units[47]	12-26-35	60c	1½	
Construction Mat., com.	6-12-35	6c actual sale†		
Construction Mat., pfd.	6-12-25	12c actual sale‡		
Consumers Rock & Gravel, 1st mtg. 6½'s, 1948[47]	12-26-35	19	22	
Coosa P. C., 1st 6's[47]	12-26-35	20	30	
Coplay Cement Mfg., pfd.[47]	12-26-35	10	12	
Coplay Cement Mfg., 6's, 1941[47]	12-26-35	65	70	
Cumberland P. C., 7's, 1937[47]	12-26-35	80	85	
Dewey P. C., com.[47]	12-26-35	40	45	
Dolese and Shepard	1- 7-36	29	31	
Dufferin Pav. and Cr. Stone, pfd.[42]	12-11-35	25	....	
Federal P. C., 6½'s, 1941[47]	12-26-35	15	20	
Fla. Port. Cement, 6½'s, 1937[48]	12-11-35	100	101	
Fla. Port. Cement, units[47]	12-26-35	24	26	
Giant P. C., com.[47]	12-26-35	1	2	
Giant P. C., pfd.[47]	12-26-35	10	12	
Gyp. Lime & Alabastine, Ltd.	1- 3-36	6¾	7⅞	
Gyp. Lime & Alabastine, 5½'s, 1948[47]	12-26-35	90	93	
Hawkeye P. C., cap.[48]	12-12-35	29¾	....	
Hercules Cement, com.[49]	12-12-35	20	....	
Hermitage Cement, com.[47]	12-26-35	10	15	
Hermitage Cement, pfd.[47]	12-26-35	80	90	
Ideal Cement, 5's, 1943[47]	12-26-35	103	104	
Ideal Cement, com.[47]	12-26-35	54	56	{ .50 (ex.) Dec. 21 { .50 (qu.) Jan. 1
International Cement 5's, 1948	12-27-35	103⅛	103⅜	
International Cement, com.	1- 6-36	39⅝	39⅞	.25 Dec. 26
Kelley Island L. and T.	1- 6-36	23⅞ actual sale		.20 Jan. 1
Ky. Cons. Stone, 6½'s, 1938[47]	12-26-35	14	16	
Ky. Cons. Stone, com.[47]	12-26-35	1	2	
Ky. Cons. Stone, pfd.[47]	12-26-35	2	3	
Ky. Cons. Stone, 1st mtg. 6½'s[48]	12-11-35	15	19	
Ky. Rock Asphalt, 6½'s, 1935[47]	12-26-35	26	30	
Lawrence P. C.	1- 3-36	19½	20½	
Lawrence P. C., 5½'s, 1942[47]	12-26-35	97	100	
Lehigh P. C., com.	1- 6-36	16	16¼	
Lehigh P. C., 7% pfd.	1- 3-36	107	actual sale	.87½(accum.)Jan.2
Louisville Cement[47]	1- 6-36	85	....	
Lyman-Richey 1st 6's, 1935[47]	12-26-35	15	20	
Marbelite Corp., com. (cement pts.)[48]	12-12-35	20c	35c	
Marbelite Corp., pfd.[48]	12-12-35	3½	4½	
Marblehead Lime, 7's, 1944[14]	12-11-35	90	92	
Marquette Cement, com.[47]	12-26-35	26	28	
Marquette Cement, pfd.[47]	12-26-35	95	100	
Material Service Corp.[47]	12-26-35	4	6	
McCrady-Rodgers, com.[47]	12-26-35	6	8	
McCrady-Rodgers, 7% pfd.[47]	12-26-35	35	40	
Medusa P. C., com.[47]	1- 6-36	16	17	
Medusa P. C., pfd.[47]	12-26-35	45	50	
Michigan L. and C., com.[47]	12-26-35	50	55	
Missouri P. C.	1- 6-36	10½	11¼	
Monarch Cement, com.[47]	12-26-35	90	100	
Monolith P. C., com.[9]	12-13-35	2	3	
Monolith P. C., 8% pfd.[9]	12-13-35	5¾	6¾	.25(accum.)Dec.10**
Monolith P. C., units[9]	12-13-35	13½	16½	

RECENT QUOTATIONS ON ROCK PRODUCTS SECURITIES

Stock	Date	Bid	Asked	Dividend
Monolith P. C., 1st mtg. 6's[9]	12-13-35	100	101	
Monolith Portland, Midwest, pfd.[9]	12-13-35	1¼	1½	
National Cement (Can.) 1st 7's[42]	12-11-35	100	102	
National Gypsum A., com.[47]	12-26-35	41	42	
National Gypsum, pfd.[47]	12-26-35	98	100	1.75 (qu.) Jan. 2
National Gypsum, 6's[47]	12-26-35	104	106	
National L. and S., 6½'s, 1941[47]	12-26-35	50	55	
Nazareth Cement, com.[47]	12-26-35	5	7	
Nazareth Cement, pfd.[47]	12-26-35	47	50	
Newaygo P. C., 7% cum. pfd.[48]	12-12-35	35	....	
Newaygo P. C., 1st 6½'s, 1938[48]	12-11-35	99	101	
New England Lime, units[14]	12-11-35	4	6	
N. Y. Trap Rock, 1st 6's, 1946	1- 6-36	83	actual sale	
N. Y. Trap Rock, 6's, stamped, 1946	1- 6-36	84¾	actual sale	
N. Y. Trap Rock, 7% pfd.[48]	12-11-35	60	....	
North Amer. Cement, 1st 6½'s, 1953[47]	12-26-35	25	27	
North Amer. Cement, 6½'s, 1943[47]	12-26-35	78	82	
North Amer. Cement, 6½'s, 1940[47]	12-26-35	50	53	
North Amer. Cement, "A"[47]	12-26-35	1	2	
North Amer. Cement, "B"[47]	12-26-35	3	4	
North Shore Mat. 1st 6's[47]	12-26-35	35	40	
Northwestern Port. Cem. units[9]	12-13-35	43	47	
Northwestern States P. C.[47]	12-26-35	22	25	.40 Jan. 2
Ohio River S. and G., com.	1- 6-36	....	2	
Ohio River S. and G., 1st pfd.	1- 6-36	59	61	
Ohio River S. and G., 2nd pfd.	1- 6-36	90	....	
Ohio River S. and G., 6's[48]	12-11-35	11	13	
Oregon P. C., com.[47]	12-26-35	3	4	
Oregon P. C., pfd.[47]	12-26-35	75	80	
Oregon P. C., conv. pfd.	12-26-35	30	35	
Pacific Coast Agg., new com.[49]	12-12-35	2⅜	2½	
Pacific P. C., com.[49]	12-12-35	2¾	3½	
Pacific P. C., pfd.[49]	12-12-35	41½	44	
Peerless Cement, com.[47]	12-26-35	1	2	
Peerless Cement, pfd.[47]	12-26-35	2	4	
Penn.-Dixie Cement, com.	1- 6-36	5	5⅛	
Penn.-Dixie Cement, pfd. A	1- 6-36	31	32	
Penn.-Dixie Cement, 6's A, 1941	1- 6-36	92¾	actual sale	
Penn. Glass Sand Corp., com.[9]	12-26-35	14	16	
Penn Glass Sand Corp., 1st 4½'s, 1960[47]	12-26-35	101	102	
Petoskey P. C., 6's, 1941[48]	12-11-35	90	....	
Petoskey P. C., 6's, 1935-38[48]	12-11-35	90	....	
Petoskey P. C., com.[48]	12-11-35	4	4¾	
Republic P. C., 6's, 1943[47]	12-26-35	95	100	
Riverside Portland Cement, A[9]	12-13-35	8	9	
Riverside Portland Cement, B[9]	12-13-35	1¼	1¾	
Riverside Portland Cem., pfd.[9]	12-13-35	86	88	
Rockland and Rockport Lime, 1st pfd.[47]	12-26-35	3	5	
Santa Cruz P. C., com.[9]	12-13-35	34	39	
Schumacher Wallboard, pfd.[9]	12-13-35	19	21	
Signal Mt. P. C., units[47]	12-26-35	37	40	
Southwestern P. C., units[48]	12-12-35	175	....	
Spokane P. C., units[49]	12-12-35	8	10½	
Standard Paving & Mat. (Can.), com.[42]	12-11-35	1	1⅛	
Standard Pav. & Mat., pfd.[42]	12-11-35	12	17	
Superior P. C., A[49]	12-12-35	43	44½	.55 (accum.) Jan. 2
Superior P. C., B[49]	12-12-35	12	13½	
Trinity P. C., units[47]	12-26-35	20	24	
U. S. Gypsum, com.	1- 6-36	87	88	{ .50 (ex.) Dec. 24 { .25 (qu.) Jan. 2
U. S. Gypsum, pfd.	1- 4-36	163	165	1.75 (qu.) Jan. 2
Victoria Gypsum Co., Ltd., of Nova Scotia, pfd., par $100	12- 4-35	5 actual sale§		
Volunteer P. C., 1st 7's, 1942[49]	12-12-35	91	....	
Volunteer P. C., units[49]	12-12-35	67	75	
Vulcanite P. C., com.[49]	12-12-35	3	5½	
Vulcanite P. C. 7½'s, 1943[49]	12-12-35	60	....	
Wabash P. C.[47]	12-26-35	7	9	
Warner Co., ww. 1st 6's, 1944[47]	12-26-35	66	69	
Warner Co., com.[47]	12-26-35	2	5	
Warner Co., pfd.[47]	12-26-35	8	11	
Whitehall Cement Mfg., com.[47]	12-26-35	33	36	
Whitehall Cement Mfg., pfd.[47]	12-26-35	60	65	
Wisconsin L. & C., 1st 6's, 1940[47]	12-26-35	62	65	
Wolverine P. C., com.[47]	12-26-35	4	5	
Yosemite P. C., A. com.[49]	12-12-35	3¾	4	

Quotations by: [9]A. E. White Co., San Francisco, Calif. [14] The Securities Co. of Milwaukee, Inc., Milwaukee, Wis. [27]Wise, Hobbs & Seaver, Inc., Boston. [40]Martin Judge, Jr., and Co., San Francisco, Calif. [42]Nesbitt, Thomson & Co., Toronto. [46]First National Bank of Chicago, Chicago, Ill. [47]Anderson Plotz and Co., Chicago, Ill. [48]Hewitt, Ladin & Co., New York, N. Y. [49]Feldman & Co., Inc., Boston, Mass.

† 60 shares sold at auction, at New York, N. Y.
‡100 shares sold at auction, at New York, N. Y.
§10 shares sold at auction, at Boston, Mass.
**This leaves $3.35 arrearage.
*This leaves arrearage of $11.
F—Flat.

Recent Dividends Announced

Alpha P. C., com.	$0.25	Jan.	25, 1936
Arundel Corp., com. (quar.)	.25	Jan.	2, 1936
Calaveras Cement, 7% pfd. (accum.)	1.00	Jan.	15, 1936
Ideal Cement, com. (Xmas extra)	.50	Dec.	21, 1935
(quar.)	.50	Jan.	1, 1936
Payment of 25c in previous quarters.			
International Cement, com.	.25	Dec.	26, 1936
Kelley Island L. and T. (quar.)	.20	Jan.	1, 1936
Minnesota Mining & Mfg.	.17½	Jan.	2, 1936
(extra)	.05	Jan.	2, 1936
National Gypsum, 1st pfd. (quar.)	1.75	Jan.	2, 1936
2nd pfd. (quar.)	.25	Jan.	2, 1936
Northwestern States P. C. Co.	.40	Jan.	2, 1936
Pennsylvania Glass Sand Corp., pfd. (accum.)	1.75	Feb.	1, 1936
(quar.)	1.75	Jan.	2, 1936
Superior P. C., Class A (accum.)	.55	Jan.	2, 1936

◆ ◆ ◆

Consolidated Cement Corp., Chicago, Ill., reports earnings from May 1, when reorganization was effected, to September 30, 1935. as follows:

Net profits after providing for bond and note interest and bond discount and expense amounting to $54,297, and after charging off to depreciation and depletion $54,607	$52,634
On the basis required by the company's bond indenture for the purpose of computing profits available for interest on the company's bonds and notes, the earnings available for such purpose for the period May 1, 1935 to September 30, 1935. are	161,287
On August 1, 1935, the first interest coupons on both the bonds and notes were paid, amounting to	60,371

BALANCE SHEET AS OF SEPTEMBER 30, 1935

Assets—	
Cash, demand deposits and working funds	$422,376
Receivables	*63,138
Inventories	281,826
Cash surplus value life insurance	31,800
Bonds and stocks	17,924
Notes and accounts receivable	4,368
Deposits in closed banks	6,392
Claims receivable	243
Plants, property and quarry lands	**4,999,081
Prepaid expenses and deferred charges	148,004
Total	$5,975,157
Liabilities—	
Provision for fees and expenses incident to reorganization (est.)	$21,756
Accounts payable, trade	19,183
Accruals	27,422
Provision for returnable sacks	22,569
15-year first mortgage 6% cumulative income bonds	1,823,706
15-year 6% cumulative income notes	208,757
†Class A stock (no par value)	100,617
Class B stock, no par value	(‡)
Capital surplus	3,698,510
Net profit for 5 months ending September 30, 1935	52,634
Total	$5,975,157

*After reserve for bad debts of $8,870 and reserve for cash discount of $3,977.

**After reserve for depreciation and depletion of $1,414,466.

†To be represented by voting trust certificates. Authorized. 100,653 shares; issued in reorganization, 100,617-5/100 shares, having a stated value of $1 per share.

‡To be represented by voting trust certificates (warrants to be issued representing the right to purchase 55,712 shares at $4 per share prior to January 1, 1940); issued to date, 41,996.

◆ ◆ ◆

New England Lime Co., Adams, Mass., has voted to issue 24,997 no-par shares, for services, to certain officers and employes in consideration of their executing employment contracts with the company.

◆ ◆ ◆

National Cement Co., Montreal, Que., subsidiary of the Canada Cement Co., called for redemption on November 1 of all its outstanding 7% first mortgage bonds at 102 and accrued interest.

Six years ago the Canada Cement Co. acquired control of the National Cement from Alfred Rogers and associates. The company was formed in the early part of 1925 and in the fall of the same year commenced manufacturing operations at the Montreal East plant, which has a capacity of 1,000,000 bbl. annually.

Early in 1928 Mr. Rogers and his associates acquired control of the National Cement Co., the old shareholders receiving $90 for each preferred and $10 for each share of common stock. This deal involved nearly $2,500,000. In addition there was a funded debt outstanding of $1,400,000, which remained undisturbed. It is these bonds which are now being called for redemption.

Will Reorganize

Ohio Sand and Gravel Co., Columbus, Ohio, has been granted permission to reorganize under federal bankruptcy law, section 77B. George S. Marshall was named trustee. The bankruptcy reorganization litigation was filed, according to the petition, to prevent sale of the concern at public auction as authorized by a receiver appointed August 3, 1934, in the county courts.

Under the reorganization plan the stockholders hope to be able to settle with creditors and through a revamping of the capital structure bring about a return of the company to its stockholders.

Cement Shipments Hold Up

Portland cement industry in November produced 7,086,000 bbl. shipped 5,976,000, and had in stock at the end of the month 21,611,000. Production and shipments showed increases, respectively, of 22.6 and 5.3%, as compared with November, 1934. Portland cement stocks at mills were 7.6% higher than a year ago.

The statistics here given are compiled from reports for November, received by the Bureau of Mines, from all plants except one.

In the following statement of relation of production to capacity the total output of finished cement is compared with the estimated capacity of 162 plants at the close of November, 1934, and of 163 plants at the close of November, 1935.

RATIO (PER CENT) OF PRODUCTION TO CAPACITY

	November, 1934	Oct., 1935	Sept., 1935	Aug., 1935
The month	26.2	32.2	33.1	32.6	31.8
The 12 months ended	28.7	28.1	27.6	27.3	27.4

Shipments for 1935 are expected to be but 2,000,000 or 3,000,000 bbl. less than in 1934, when they were approximately 76,000,000.

To Reorganize

American Portland Cement Co., Foreman, Ark., now in bankruptcy, has submitted to the federal court for the western district of Arkansas a plan of reorganization. This is the company with a half completed plant, which last summer obtained an R. F. C. loan of approximately $200,000, on condition that the promoters raise another $100,000 to complete the plant. The cement industry subsequently protested this use of public funds, without success.

New Directors

International Cement Corp., New York City, has announced to the committee on stock list of the New York Stock Exchange that Charles Hayden, Robert G. Stone, and John R. Dillon have resigned as directors, and Mr. Dillon as chairman of the executive committee and as a vice president. Newly elected directors are Parmely Herrick, Hans H. Muehlke and Gerald J. Donaghy.

Reorganized, Renamed

Piper Gravel Co., Connersville, Ind., is the new name of the former Connersville Gravel Co. Clyde Piper, organizer of the original company, remains in charge. The plant has just recently been rebuilt and new equipment added. Much of the older equipment has been relocated and new conveyors constructed. A new crane, purchased recently, has been installed to be used in stripping and handling materials.

Increases Advertising 50%

Portland Cement Association, Chicago, Ill., will increase its advertising appropriation for 1936 about 50% above 1935, Edward J. Mehren, president of the Association, has announced.

"About the same amount of newspaper space as was used last year will be used again in 1936," Mr. Mehren said, "but expenditures in general consumer magazines will be substantially increased.

"During 1935 the Portland Cement Association expressed its confidence in newspapers as productive advertising media by using approximately 80% of its total advertising funds in newspapers. More than 3,000 daily and weekly newspapers were used," Mr. Mehren stated.

"Our magazine copy will describe construction methods by means of which the frame, enclosing walls and decorative elements in a building are cast in one operation. Other copy in our 1936 advertising will carry messages on sound highway planning, emphasizing safety to highway transportation."

Competitors Beware!

United States Gypsum Co. Rifle and Pistol Club of Chicago has been granted a charter by the National Rifle Association. The club has a charter membership of 24.

TRAFFIC and TRANSPORTATION

Proposed Rate Changes

THE FOLLOWING are the latest proposed changes in freight rates up to and including the week of December 21.

New England

37480. **Talc or soapstone,** Madoc, Ont., to Lewiston, Me., proposed, 31½c per 100 lb. Reason: Same as applicable to Cumberland Mills, Me.

Trunk

34117 (Sup. 1). **Stone, crushed, slag, gravel and/or sand,** coated with oil, tar or asphaltum* in open top equipment, (See Note 3), to stations on the B. & O. R. R., Cumberland, Md. and west and stations on the W. Md. Ry., Cumberland, Md., and west thereof, from Marion, Va., rates ranging from $2.13 to $2.87 per net ton, from Roanoke, Va., rates ranging from $1.83 to $2.59 per net ton, plus emergency charge.

34179. **Talc tailings,** C. L.; **soapstone,** ground or pulverized, other than soapstone testing not less than 99% through 200 mesh screen, C. L.; **soapstone,** crude, not ground or pulverized (not blocks or slabs), C. L., minimum weight 70,000 lb., from Schuyler, and Damon, Va.; to Cumberland, Md., 17c per 100 lb., plus emergency charge.

34181. **Stone,** crushed, C. L., (See Note 2), to Webster Springs, W. Va., from Peddicord Siding, Leonard Siding, Md., $2.20; Cavetown, Security, Hagerstown, Williamsport and Pinesburg, Md., $1.90, and Thomasville, Bittinger and York, Penn., $2.10 per net ton, plus emergency charge.

From Frederick and Grove, Md., $2.30; Engle and Martinsburg, W. Va., $2.20; Millville, W. Va., Stephens City, Strasburg Junction and Strasburg, Va., $2.40; Greer, W. Va., $1.80 and Casparis and Dunbar, Penn., $1.90.

34182. **Stone,** natural (other than bituminous asphalt rock), crushed, coated with oil, tar or asphaltum, C. L., (See Note 2), from Rochester, N. Y., to N. Y. C. R. R. points, Cold Water, Gardenville, Lewiston, Alexander, Holley, Model City, Hilton, Byron, Suspension Bridge, N. Y., and various, rates ranging from 73c to $1.23 per net ton, plus emergency charge.

34184. **Stone,** crushed, coated with tar, oil or asphaltum, in bulk in open top equipment, in straight carloads (See Note 2)* from Llanerch, Penn., to Norfolk, Va., $1.82 per net ton, plus emergency charge. Proposed rate is comparable with rate from Campbell, Penn., to Norfolk.

34185. **Roasted dolomite** (refractory dolomite in granular form, treated, clinkered and/or burned to a dead state), C. L., minimum weight 60,000 lb.; **roasted calcite,** in granular form (treated or coated, clinkered and/or burned to a dead state), C. L., (See Note 2), from Millville and (1) Martinsburg, W. Va., to Mingo Junction, O., and New Castle, Penn., $1.94 per net ton. (1) Rates from Martinsburg, W. Va., to apply only on roasted calcite. Also to cancel the commodity rates from Millville and Martinsburg, W. Va., to Charleston, W. Va., Bradford, East Bradford, Custer City, Howard Junction, Lewis Run and Leechburg, Penn., sixth class rates to apply. (Sup. 1) From Williams, Penn., to Mingo Junction, Ohio, and New Castle, Penn., $2.24.

(Sup. 2) To Mingo Junction and New Castle, Penn., from Blue Bell, Penn., $2.24, and from Billmyer and Union Stone Co., Penn., $1.94 per net ton.

34186. **Crude fluxing limestone,** C. L., (See Note 2), to Johnsonburg, Penn., from Aldham, Blue Bell, Cedar Hollow, Devault, Exton, Howellville, King of Prussia, Knickerbocker, Mill Lane, Plymouth Meeting, Rambo, Shainline, Swedeland and Williams, Penn., $2 per gross ton, plus emergency charge.

34187. **Limestone, fluxing, crude,** C. L., and **limestone, fluxing, crushed,** C. L., (See Note 2), from Williams, Cedar Hollow, Exton, Howellville, Mill Lane, Shainline, Swedeland, Plymouth Meeting, Blue Bell, Rambo, Knickerbocker, King of Prussia, Aldham and Devault, Penn., to Allentown, Ambler, Penn., Mahwah, N. J., Scranton, Swedeland, Penn., Wilmington, Del., Matawan, Jersey City, Bound Brook, Paterson, Clifton, N. J., Philadelphia, Wilkes-Barre, Penn., and various, rates ranging from 50c to $1.60 per gross ton, plus emergency charge.

34189. Amend Item 680 of Canadian National Ry. Tariff I. C. C. E-366, **feldspar and quartzite,** in packages or in bulk, C. L., minimum weight 60,000 lb., from Actinolite, Bronson, McConnell, Tory Hill, Ont., and various, to Trunk Line territory, by adding Lakefield, Ont., as an origin point at same rate as applicable from other origin points.

34191. **Crude fluxing limestone,** C. L., (See Note 2), from Cedar Hollow and Williams, Penn., to Lansdale, Penn., 63c, and Quakertown, Penn., 75c per gross ton, plus emergency charge. Proposed rates are comparable with rates from Williams, Penn., to Pottstown, Phoenix and Birdsboro, Penn.

Sup. 1 to 34191. **Crude fluxing limestone,** C. L., (See Note 2), from Thomasville, Bittinger and York, Penn., to Lansdale and Quakertown, Penn., $1.40 per gross ton.

(Sup. 2) from Billmyer and Union Stone Co., Penn., to Lansdale and Quakertown, Penn., $1.40 per gross ton.

34194. **Refuse fullers earth,** C. L., (See Note 2), from Philadelphia, Penn., to Lebanon, Penn., $1.55 per net ton, plus emergency charge. Proposed rate is comparable with rate from Philadelphia and Chester, Penn., to Seitzland, Penn.

34197. **Stone,** crushed, coated with tar, oil or asphaltum, in bulk, in open top equipment in straight carloads (See Note 2)* from Wertz, Penn., to Brandy Camp, Penn., $1.77 per net ton, plus emergency charge.

34198. **Crushed stone** (natural, other than bituminous asphalt rock), carload (See Note 2), from Casparis, Penn., to Brandy Camp and Shelvey, Penn., $1.70 per net ton, plus emergency charge.

34199. To cancel commodity rates on **sand,** carload, from stations in the Palmerton district on the Chestnut Ridge Railway and Lehigh and New England Railroad to destinations in L. & N. E. R. R. Tariffs listed:

Tariff	Territory
I. C. C. No. A-5990	D. L. & W. R. R.
I. C. C. No. A-6236	Erie R. R., N. Y. S. & W. R. R.
I. C. C. No. A-5877	L. V. R. R.
I. C. C. No. A-6153	B. & O. R. R., P. R. R., P.-R. S. S. Lines.
I. C. C. No. A-6203	Reading Company.
I. C. C. No. A-6190	N. & B. R. R.
I. C. C. No. A-6288	New England.

34204. **Gravel,** carload, 60,000 lb. to Bushwick, N. Y., from Danville, Que., proposed rates 30½, as from Parkville, N. Y.

34210. **Stone dust, carload,** (See Note 2), from Bound Brook, N. J., to Absecon, N. J., $1.40 per net ton, plus emergency charge.

34215. **Sand and gravel** (other than ground or pulverized or naturally bonded molding), in open top cars, without tarpaulin or other protective covering, C. L., (See Note 2), from Attica, N. Y., to Jamestown, N. Y., $1 per net ton, plus emergency charge. Reason—Proposed rate is comparable with rates from Buffalo and Erie, Penn., to Jamestown, N. Y.

(Sup. 1) On container cars, unloading of containers not to be performed by railroad at destination.

34216. **Limestone,** crude, fluxing, foundry and furnace, in open top equipment, C. L., (See Note 2), from Thomasville, York and Bittinger, Penn., to Bethlehem, Penn., $1.50 per net ton, plus emergency charge.

(Sup. 1) from Billmyer and Union Stone Co., Penn., to Bethlehem, Penn., $1.50 per net ton.

*Note—The oil, tar and/or asphaltum not to exceed 10% by weight of the commodity shipped, the shipper to so specify on shipping orders and bills of lading.

Note 1—Minimum weight marked capacity of car.

Note 2—Minimum weight 90% of marked capacity of car.

Note 3—Minimum weight 90% of marked capacity of car, except that when car is loaded to visible capacity the actual weight will apply.

34220. **Stone,** crushed, and **screenings,** in straight or mixed carloads (not agricultural limestone nor ground limestone, unburnt; fluxing stone or firestone; or stone, coated with oil, tar or asphaltum), (See Note 2), from Dalmatia, Penn., to Solomons Gap, Penn., $1.30 per net ton, plus emergency charge. Reason—Proposed rate is comparable with rates to Miners Mills, Jermyn and Jessup-Peckville, Penn.

34225. **Granulated slag,** C. L., (See Note 2), from McKeesport, Bessemer and Clairton, Penn., to Hamilton, Ont., $3.60 and to Toronto, Ont., $4.10 per net ton.

34228. **Slate,** dust, crushed or ground, C. L., from the Bangor-Pen Argyle-Wind Gap, Penn., district to Philadelphia, Penn., 11½c per 100 lb. Proposed rate is same as from Lenhartsville, Penn., district.

34229. **Crushed stone,** C. L., (See Note 2), from White Haven, Penn., to Peckville-Jessup, Penn., $1.10 per net ton, plus emergency charge.

34239. **Industrial sand,** C. L., (See Note 2), from N. Y. C. R. R. origins, Rhinecliff, Germantown, Rensselaer, Albany, Troy, Green Island, Cohoes, Crescent, Niskayuna, Aqueduct, West Albany, Karner, Schenectady, N. Y., and from W. S. R. R. origins, Alsen, Coxsackie, Selkirk, Wemple, Glenmont, Albany, Fullers and South Schenectady, N. Y., to Coaticook, Que., $4.03 per net ton, plus emergency charge.

34253. **Blast furnace slag,** carload, minimum weight 50,000 lb., from Hamilton, Ont., to New York, N. Y., Baltimore, Md., Boston, Mass., Providence, R. I., $4.28 per gross ton, this being comparable with rates on pyrites ore cinders from Hamilton, Ont., to Newark, Brills, N. J., etc.

Central

44995. To establish on **sand,** C. L., minimum weight per Item 30, N. Y. C. R. R. Tariff I. C. C. L. S. 1855, from Glass Rock, O., to Lancaster, O., 70c in open top cars and 81c per net ton in closed equipment. Route—Via N. Y. C. R. R., Crooksville or Zanesville, O., and P. R. R.

45074. To revise rates on **agricultural limestone** (unburned), in bulk in open top cars only, C. L., from Greencastle, Ind., to points in Illinois on the I. C. R. R. (Rates in cents per net ton.) To representative points: Springfield, 126; Spaulding, 134; Olney, 117; Maroa, 113; Clinton, 113; Seymour, 113; Decatur, 113; Lincoln, 113; Belleflower, 113; Farmer City, 113; Newton, 117; Effingham, 117; Magnet, 117; Alma, 117; Thomas, 113; Crumbaugh, 113.

45096. To establish on **moulding sand,** C. L., from Terre Haute, Ind., to Rockford, Ill., 180c per net ton.

45163. To establish on (a) **sand,** naturally bonded moulding, in all kinds of equipment and sand (except naturally bonded moulding, ground or pulverized sand) in closed equipment; (b) sand, ground or pulverized, in all kinds of equipment and (c) sand (except naturally bonded moulding, ground or pulverized sand) and gravel in open top equipment, C. L. Proposed rates in cents per net ton:

To Fredonia, N. Y.—From M. & S. Valley group: (a) 160; (b) 176; (c) 140. From Oil City group: (a) 150; (b) 165; (c) 130.

(Proposed rates on gravel to apply only from Phalanx, O.)

45164. To establish on **limestone,** unburnt, ground or pulverized, in box cars, in bulk or in packages, C. L., minimum weight 60,000 lb., except to points in the state of Ohio, minimum weight will be 50,000 lb., from Ohio City, O. (Rates in cents per net ton.)

To (representative): Chicago, Ill., 185; Saxony, Ind., 175; Leiters, Ind., 135; Rochester, Ind., 130; Akron, Ind., 120; Huntington, Ind., 100; Kingsland, Ind., 85; Magley, Ind., 80; Decatur, Ind., 75; Wren, O., 70; Spencerville, O., 70; Lima, O., 80; Espyville, O., 110; Burbank, O., 140; Youngstown, O., 180.

45169. To establish on **crushed stone and crushed stone screenings,** in straight or mixed carloads, from Hillsville and Walford, Penn., to West Virginia points. Representative proposed rates in cents per net ton: To Cameron, 140; Burton, 150; Metz, 160; Monongah, 170; Clarksburg, 170; Parkersburg, 160; Waverly, 150; Lumberport, 170; Brown, 160; Pine Grove, 160; Wilsonburg, 170. Plus emergency charge.

45185. To establish on (a) **sand,** naturally bonded moulding in all kinds of equipment, and sand (except sand naturally bonded moulding, ground or pulverized sand), in closed equipment; (b) sand, ground or pul-

verized, in all kinds of equipment, and (c) sand (except naturally bonded moulding; ground or pulverized sand), in open top equipment; C. L. (See Note 3), but not less than 60,000 lb. and 80,000 lb., respectively, for closed and open top cars, from Millington, Oregon, Ottawa, Sheridan, Utica, Wedron, Ill., to Adrian, Mich.: (a) 220c, (b) 242c, and (c) 215c per net ton.

45186. To establish on **sand** (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, moulding or silica), and gravel, in open top cars, C. L., (See Note 3), from Leeland, Ind., to Kimmell, Ind., 50c per net ton.

45204. To establish on industrial **sand**, C. L., minimum weight, from points on W. & L. E. Ry. in Canton group, viz., Barr, Beach City, Dundee, Kent sand and gravel pit, Massillon, New Cumberland and Somerdale, O., to Steubenville, O., 130c per net ton, plus emergency charge.

45218. To establish on **slag screenings** (not ground), C. L., minimum weight, from Ashland, Ky., to Kenova, W. Va., 40c per ton.

45233. (Cancels 44032 and 44576). To establish on **sand**, from Conneaut, Sandusky, Oil City, and Southern Ohio groups, to points in Wisconsin and Minnesota, rates based upon mileages applied to scale in I. C. C. Docket 29907.

45239. To establish on **asphaltic limestone**, rates ranging from 255 to 350c a ton from New Vienna, O., to S. F. A. points such as Goldsboro, Raleigh, Charlotte, N. C.

45251. To establish on **sand** (except ground or pulverized) in open or closed equipment, carload, (See Note 3), but not less than 60,000 and 80,000 lb., respectively, for closed and open top cars, from Millington, Oregon, Ottawa, Sheridan, Utica and Wedron, Ill., to Buffalo, N. Y., and Buffalo, N. Y., district points, 280c per net ton.

45255. To establish on **agricultural limestone**, unburnt, carload, in closed equipment, minimum weight 60,000 lb., from Piqua, O., to Battle Creek, Mich., 165c per net ton.

45256. To establish on **crushed stone** (in bulk) and **crushed stone screenings** (in bulk), in open top cars, carload, from White Sulphur and Scioto, O., to Point Pleasant, 135c; Charleston, 155c, and Gauley Bridge, W. Va., 175c per net ton.

45273. To establish on **limestone**, unburnt, ground or pulverized, in box cars, in bulk or in packages, C. L., minimum weight 50,000 lb., from Ohio City, O., to Decatur, 105c; Kingsland, 110c; Huntington, 130c; Bolivar, 145c; Laketon, 150c; Rochester, 170c; DeLong, 185c; Kouts, 190c; Crown Point, Ind., 195c; and Chicago, Ill., 210c per net ton.

45287. To establish on **slag**, commercial, crushed, in open-top cars, C. L., from Lorain-South Lorain, O., to New Lexington, O., 135c per net ton.

45289. To establish on **stone, fluxing, furnace or foundry, melting** and/or **refractory** (unburned), in bulk in open-top cars, C. L., from Annandale, Branchton, Harrisville and Osbornes, Penn., to Cleveland, O. (Erie R. R. delivery), 113c per gross ton.

45304. To establish on **agricultural limestone**, unburnt, ground or pulverized, in box cars, in bulk or in packages, C. L., min. wt. 50,000 lb., from Rockford, O., to Mishawaka, Ind., 185c per net ton.

45305. To establish on **agricultural limestone**, unburnt, in closed equipment, C. L., min. wt., 60,000 lb., from Piqua, O., to Erie, Penn., 215c; Buffalo, N. Y., 245c, and Evansville, Ind., 230c per net ton.

Southern

Amdt. 1 to 10033. **Limestone, ground or pulverized**, in closed cars, C. L., Krause, Ill., to points in Alabama, Mississippi and Tennessee. Change the proposed minimum weight to be 67,000 lb. Correct the proposed rate to New Orleans, La., to 275c per net ton. Add Tupelo, Miss., as a destination at 216c. Add Pensacola, Fla., as a destination at 275c.

10251. Valmeyer, Ill., to points in Alabama, Mississippi and Tennessee, and New Orleans, La. To establish rates on **limestone, ground or pulverized**, in bags, in closed cars, C. L., minimum weight 60,000 lb., from Valmeyer, Ill., to destinations to which rates were suggested under Submittal 10033, from Krause, Ill., the same as proposed from Krause.

10259. To establish rates on **limestone, ground**, C. L., in bulk or in packages, minimum weight 60,000 lb., from Buchanan, Va., to N. S. R. R. Virginia destinations on basis of the Docket 19943 (Sub. 1) scale. Proposed rates to representative points are: To Butts, Greenwich, Groveland, Lake Smith, Inlet, Land and Williamson, Va., 175; St. Brides, Virginia Beach, Cape Henry, Pleasant Ridge and Munden, Va., 180; to Cypress, Va., 170c per net ton. Rates to apply intrastate.

10347. **Limestone, ground or pulverized.** To establish rates, C. L., minimum weight 67,000 lb. (or Note 1, if less),

To	(1)	(2)	(3)	(4)
Columbus, Miss.	*126	*183	*183	160
Corinth, Miss.	135	188	188	173
Elizabeth, Miss.	*172	*227	*227	*212
Grand Jct., Tenn.	145	196	196	174
Hattiesburg, Miss.	*164	*218	*218	*203
Lumberton, Miss.	*172	*226	*226	*203
Memphis, Tenn.	154	205	205	191
Meridian, Miss.	138	*192	*192	*176
Mobile, Ala.	...	194	194	187
New Orleans, La.	...	220	220	206
Vicksburg, Miss.	*187	*244	*244	*220

(1) From Dolcito, Ala. (2) From Whitestone, Ga. (3) From Tate, Ga. (4) From Cartersville, Ga.

*Will not apply in open top cars. See Agent Pope's Freight Tariff 227-B, I. C. C. 1676.

10284 To establish rates based 12½% of 1st class on **stone, marble or granite** (except terrazzo aggregates; bituminous rock, asphaltic limestone, bituminous asphalt rock, phosphate rock, soapstone or gypsum), crushed, granulated, ground or pulverized, including stone dust, in bulk or in bags in box cars, carloads, (See Note 3), from S. F. A. territory to official classification territory.

10442. **Limestone or marble**, ground or pulverized, C. L. To establish rates of 226c per net ton from Dolcito, Ala., and 262c per net ton from Tate and Whitestone, Ga., C. L., minimum weight 88,000 lb., to St. Louis, Mo. (applicable only for St. Louis Terminal R. R. Assn. deliveries) and East St. Louis, Ill. (applicable only for St. Louis Terminal R. R. Assn. and Penn. R .R. deliveries).

Western

C-41-123. **Sand, gravel, stone**, crushed, etc., usual minimum weight, from Louisville, Neb., to C. R. I. & P. points in Iowa, Adair and west. Rates to representative points:

	Miles	Prop.
Chautauqua	31.5	63
Underwood	41.7	72
Shelby	58.0	85
Oakland	78.3	97
Audubon	110.1	113
Adair	107.8	113

D-41-124. **Sand and gravel**, C. L., (See Note 3), from Eddyville, Ia., to stations in Missouri on the Wabash Ry. Rates (in cents per net ton): To Coatesville, 90; Glenwood Jct., 90; Glenwood, 90; Julesburg, 95; Queen City, 98; Green Top, 101; Sublette, 104; Kirksville, 107.

C-41-125. **Sand and gravel**, C. L., usual minimum weight, from Lyman-Richey Sand & Gravel Co. pit, located 6.17 miles south of Fremont, Neb., to stations in Iowa. Rates: To Moorhead, 62; Preparation, 62; Pisgah, 58; Orson, 53½; Mondamin, 49; Modale, 49; California Jct., 49. Proposed rates to expire with June 30, 1936.

D-41-126. **Stone**, crushed, C. L., (See Note 3), but not less than 40,000 lb., from Dell Rapids, Spencer and Sioux Falls, S. D., to What Cheer, Iowa. Proposed—220c per net ton.

D-118-1 **Earth, fuller's**, C. L., from Logan, Utah, to Chicago, Ill. Proposed—$8.50 per ton, minimum 100,000 lb., plus emergency charge.

Southwestern

6857. **Silica sand**, Everton, Ark., to Pine Bluff, Ark. Suggests reducing the current rate to $1.73 per net ton, which is the same rate as applicable from Guion, Ark. These are competitive producers.

6859. To establish rate $3.80 net ton on **ground limestone**, Quincy, Ill., to Houston, Tex.

6894. To establish rate of 340c per net ton on **slate, crushed or ground, or broken slate** ranging in size up to 200 lb. weight, minimum weight 80,000 lb., or (See Note 1) but not less than 60,000 lb., from Hot Springs, High Point and Mountain Pine, Ark., to Chicago and Waukegan, Ill.

6902. **Dolomite**, Neosho, Mo., to Kansas City, Mo.-Kan. To provide a minimum weight of 40,000 lb. in lieu of 60,000 lb.

6998. **Sand and gravel**, Oklahoma and Van Buren, Ark., to Talihina, Okla., to extend expiration dates of Items 245 and 980 of S. W. L. Tariff 162-J, to March 31, 1936.

Transcontinental

Sup. 1 to 17702. To add as "Section 1" **limestone, sand, slag, etc.**, min. wt. 60,000 lb., C. L., 60c from Group D and west.

Arkansas Rates Reduced

THE ARKANSAS Corporation Commission early in December authorized the Frisco and the Cotton Belt railroads to reduce the rate on sand and gravel about 30% from Lutesville, Bono and Laird to a dozen towns in eastern Arkansas, in order to meet truck competition. The Rock Island line was granted authority to reduce from 56c to 30c a ton the rate on gravel from Cram to Calion, Ark.

Limestone Rate Established

THE I. C. C. on December 15 permitted establishment of an intrastate rate of 67.5c per ton on kiln limestone, minimum weight 50 tons, from Carla, La., to North Baton Rouge.

I. C. C. Decisions

22109. Crushed stone rates within South Carolina. The commission authorized the Atlantic Coast Line, Southern, and Seaboard Air Line to reduce rates from Rion, Blair, Columbia, and Cayce to Charleston, S. C., to meet water competition from Chesapeake Bay points. Reduction is from 149.8c to 115c a net ton from Rion; from 139.1c to 105c from Blair; and from 128.4c to 95c from Columbia and from Cayce.

26566. Phosphate Rock. Michigan Fertilizer Co. vs. L. & N. et al. By division 2. Rate, $4.81 a net ton, Siglo, Tenn., to Lansing, Mich., not unreasonable but unduly preferential to competitors at Fort Wayne and Indianapolis, Ind., Columbus, and Washington Court House, O., and intermediate points to the extent that the rates to Lansing exceed the corresponding concurrent rate from Siglo to Detroit by more than 10c. The undue prejudice has been ordered removed not later than January 23, 1936.

26816. Talc. District of Columbia Paper Manufacturing Co. vs. N. Y. C. et al. By division 5. Complainant entitled to reparation on finding rate, talc, Hailesboro, N. Y., to Georgetown, D. C., unreasonable to the extent it exceeded 22.5% of the first class rates, minimum 60,000 lb., applicable between June 24, 1930, and October 18, 1933. Claims on three shipments delivered prior to January 3, 1933, found barred.

26907. Talc. W. H. Loomis Talc Corp. et al. vs. B. & O. et al. By division 4. Charges over interstate routes from Emeryville, N. Y., to points in official territory not exceeding those that would have accrued had charges been based on rates equivalent to 22.5% of the corresponding contemporaneous first class rates, minimum 60,000 lb., applicable when the shipments moved between October 11, 1932, and October 18, 1933, not unreasonable; but higher charges unreasonable. Reparation awarded.

27127. The Commission has discontinued proceedings, having found that rates made by Louisiana on **sand and gravel, crushed stone, pulverized limestone** for agricultural purposes and various other commodities on which no intrastate surcharges have been authorized are not unduly preferential to any intrastate shippers nor prejudicial to interstate shippers.

Prices Bid—Contracts Let

Los Angeles, Calif.: Secretary of the Interior Ickes has awarded contracts for supplying 375,000 bbl. of cement for use in construction of the Imperial dam and desilting works to Riverside Cement Co., California Portland Cement Co. and Southwestern Portland Cement Co., all of Los Angeles, on their joint bid of $1.97 per bbl.

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Circleville, Ohio: Sturm & Dillard Co. awarded contract for supplying approximately 2710 tons of sand and 1692 tons of gravel for the Court street construction project. The company was the only bidder. The prices are: No. 3 and 4 concrete gravel, 75c; pea gravel, 50c; concrete sand 50c, and cushion sand, 15c. The prices are f. o. b. plant.

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Brooklyn, N. Y.: Portland cement producers have reëstablished current prices for their products on the South Brooklyn waterfront by increasing the quotation to dealers to $2.18 per bbl. in paper, f. o. b. cars alongside the dock. Since early July the price has been $1.82.

• • •

Los Angeles, Calif.: City bureau of power and light has let contract for 204,000 bbl. of cement for construction of Mono Basin project to Monolith Portland Cement Co. at $1.46 per bbl., net, f. o. b. mill, or $2.10 truck-hauled to job.

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Green Bay, Wis.: Brown county agricultural committee let contracts for producing agricultural limestone at 80c per ton, f. o. b. quarry.

• • •

Lincoln, Ill.: Aetna township officials received bids for 31,600 cu. yd. of gravel from Carl Schweikert, Lincoln, at $1.38 per cu. yd. delivered; George Hoffmann Construction Co., Lincoln, $1.53. Broadwell township officials got one bid on approximately 20,000 cu. yd. at $1.25 from the George Hoffmann Construction Co.

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Syracuse, N. Y.: Onondaga county officials awarded contract for 2200 cu. yd. of bank-run gravel to Mondo Construction Co. at 87c per cu. yd., delivered on the job. Other bids were O. R. Westfall, Jr., $1.20; W. F. Saunders, $1.78.

• • •

Killibuck, Ohio: City awarded contract to Killibuck Sand and Gravel Co. for 74 cu. yd. of washed gravel at $2.15 per cu. yd., 76 cu. yd of washed sand at $1.15 per cu. yd.

• • •

Elliott, La.: Mills county board let contract for graveling 2.3 miles of road to Southwestern Construction Co., Red Oak, for $1.30 per cu. yd.

Sand-Lime Brick Production and Shipments in November, 1935

THE FOLLOWING DATA are compiled from reports received direct from producers of sand-lime brick located in various parts of the United States and Canada. The accompanying statistics may be regarded as representative of the industry.

Nine sand-lime plants reported for the month of November, this number being one less than the number reporting for the month of October, statistics for which were published in December.

Average Prices for November

Shipping point	Plant price	Delivered
Grand Rapids, Mich.	$10.00	....
Detroit, Mich.	....	$11.50
Mishawaka, Ind.	9.25	....
Syracuse, N. Y.	14.00	16.00-20.00
Saginaw, Mich.	10.50	....
Sioux Falls, S. D.	....	15.00
Madison, Wis.	....	13.00
Toronto, Ont., Can.	12.00	13.50

Statistics for October and November

	October†	November*
Production	2,115,250	1,398,970
Shipments (rail)	129,000	83,000
Shipments (truck)	1,927,339	1,280,114
Stocks on hand	2,163,531	2,184,793
Unfilled orders	390,000	400,000

†Ten plants reporting; incomplete, three not reporting unfilled orders.
*Nine plants reporting; incomplete, two not reporting unfilled orders.

Portland Cement Pavement

AWARDS of concrete pavement for November, 1935, were announced by the Portland Cement Association as follows:

	Sq. yd. awarded during Nov., 1935	Total sq. yd. for year to date, Nov. 30, 1935
Roads	3,326,796	27,219,388
Streets	1,079,498	9,114,555
Alleys	89,355	222,293
	4,495,649	36,556,236

Cement Industry Employment

Bureau of Labor Statistics, in a report prepared for Secretary of the Interior Ickes, as public works administrator, show that orders have been placed for 62,000,000 bbl. of cement for use on public works projects up to October, resulting in the creation of more than 70,000,000 man-hours of employment and the payment of over $130,000,000 in wages.

Expanding Business

Ready Mixed Concrete Corp., Minneapolis, Minn., has recently added six 1½-yd. Rex concrete transit mixer trucks and six Diamond-T trucks to its fleet.

New Development

Southern Rock Asphalt Co., Dougherty, Okla., will develop rock asphalt deposits near Prairie Valley.

New Deposit Explored

Central Silica Co., Zanesville, Ohio, has purchased quarry property at Somerset, Ohio, and after core-drill tests is expected to develop it and build a new plant.

Breerwood Process Marketed

Separation Process Co., Fuller Bldg., Catasauqua, Penn., was recently organized. Its principal purpose is to market the Breerwood process for preparing cement raw material mixtures of correct chemical and physical composition, from inferior available materials.

The company is prepared to design, equip and install minerals separation plants, including classification, froth flotation, concentrating and thickening equipment. Three cement companies have recently closed contracts for complete separations plants.

A complete research and test laboratory has been established at 120 Bridge St., Catasauqua, to conduct all future preliminary work on cement materials and other oxidized ore minerals. In addition to an analytical department, the laboratory is equipped for both laboratory and commercial scale operations. It is now ready to accept samples of materials for test purposes.

The Breerwood process was described in Rock Products, August, 1934, and January 10, 1935, in connection with its use at the Valley Forge Cement Co. plant.

The company has acquired the Breerwood patents and applications. Its officers are, C. H. Breerwood, president; A. E. Douglass, vice-president; R. S. Weaver, treasurer, and S. E. Danner, secretary.

New Plant

Southland Gravel Co., Greenwood, Miss., has built a new plant 9 miles east of this town on the C. & G. R.R. It produces a clay-gravel for road surfacing, with a capacity of about 50 cars a day. Later the company plans installation of a washing plant for washing sand and gravel for concrete purposes. The project was promoted by S. O. Neyman, commercial agent for the C. & G. Railroad. S. A. Gano is president, with headquarters in Greenville.

Takes Grading Contract

Hersey Gravel Co., Hersey, Mich., was recently awarded a contract for grading and drainage on a 3.7-mile section of U. S. Highway 10 in Michigan, at $57,185. The company also has a highway construction contract near Manistique.

Plant Addition

Louisville Cement Co., Louisville, Ky., has let a contract to McClintic-Marshall Co., Bethlehem, Penn., for an addition to its mill building at Speed, Ind. The building will house improvements in its grinding department, including a Raymond air separator.

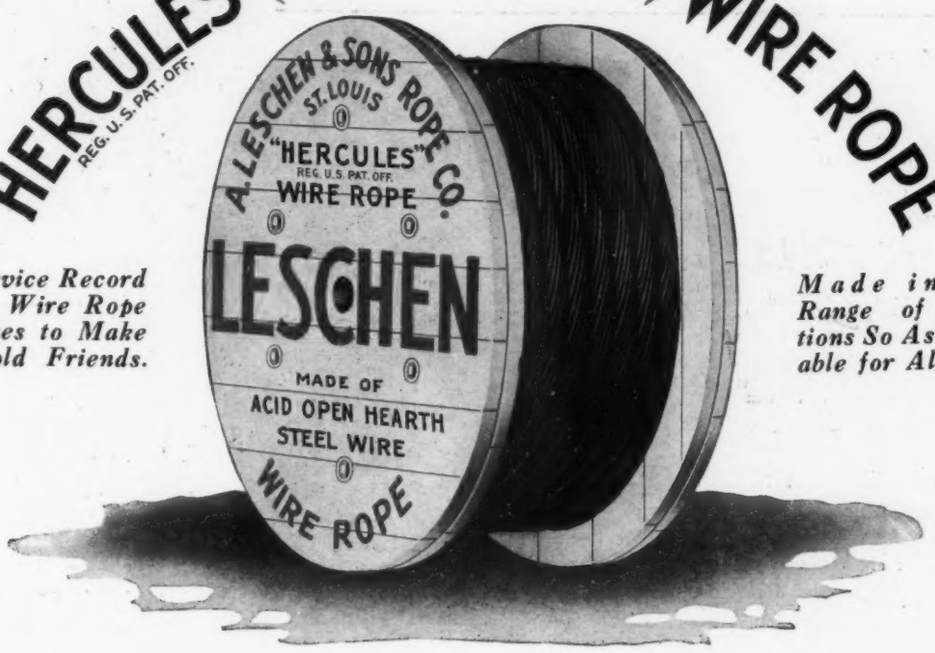
Reorganized—Renamed

Union Sand and Gravel Co., Uniontown, Ky., has been incorporated to take over the plant and business of the O.K. Sand and Gravel Co. Officers of the new company are Fred Alloway, president; J. H. Stoll, secretary-treasurer.

"HERCULES" (RED-STRAND) WIRE ROPE

REG. U.S. PAT. OFF.

The Service Record of This Wire Rope Continues to Make and Hold Friends.



Made in a Wide Range of Constructions So As to Be Suitable for All Purposes.

Repeat Orders Are Proof of Its Dependable Performance

After all is said and done, actual results on the job are what count, and we "point with pride" to the large number of sand, stone and gravel producers who continue to send in their repeat orders for Leschen Wire Rope. There are reasons, of course, why it is so consistently dependable and long lasting, and we are always glad to give full particulars.

If you are not satisfied with the yardage you are getting for each wire rope dollar that you spend, why not give "HERCULES" (Red-Strand) Wire Rope a chance to prove to you just what it can do? Measure its worth by its actual performance. We are confident that you, too, would find it uniformly reliable and economical.

Made Only by **A. LESCHEN & SONS ROPE CO.** Established 1857

5909 KENNERLY AVENUE

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New York - - - - - - 90 West Street
Chicago - - - 810 W. Washington Blvd.
Denver - - - - - 1554 Wazee Street
San Francisco - - - 520 Fourth Street

Distributors at over 100 different points. The name of our Distributor in any particular locality will be gladly furnished upon request.

THE INDUSTRY

New Incorporations

Clifton Concrete Products Co., Inc., Rutherford, N. J.; $10,000. Agent is James S. Ely.

Broward Quarries, Inc., Miami, Fla. Incorporators are J. G. Thompson and K. E. Miller.

Annadale Sand & Gravel Corp., Annadale, Va.; capital, $50,000. Incorporator is H. R. C. Shockey, Vienna.

Tennessee Minerals Co., Knoxville, Tenn. Incorporators are Charles H. Smith, Jr., and G. M. Richards, 2565 E. Fifth.

Perry Limerock Co., Perry, Ga.; to produce limestone. Incorporators are J. Meade Tolleson of Perry and Mell Smith of Orlando, Fla.

Puzzolan Cement Corp., Manhattan, N. Y.; to deal in cement and kindred products; $50,000. Filed by S. F. Peavey, Jr., 70 Pine St., New York City.

Morrow Bros., Inc., Seattle, Wash.; to mine, explore and produce sand and gravel, and to deal in cement; $25,000. Incorporators are J. G. and Clyde B. Morrow and Ned Roney.

Peabody Sand and Gravel Co., Boston, Mass.; $15,000; 1500 shares at $10 each. Incorporators are Franklin H. Lord, president; J. Fuller Morgan, treasurer; and Gertrude E. Yunghans.

Cement Research Corp., New York, N. Y.; to deal in cement, concrete and similar materials; 181 shares, no par value. Filed by Herman Meyrich, 1475 Broadway, New York City.

Consolidated Gravel Co., Columbus, Ga.; 45 shares of $100 each, with authority to increase capital stock to $100,000. Incorporators are R. D. Smith, J. P. Calhoun and L. N. Bickerstaff.

Riverside Dunbrik Co., Thiensville, Wis.; to engage in the manufacture and sale of brick and concrete products; 250 shares at $100 each. Incorporators are John A. Kruse, Hugo Laabs and A. J. De Swarte.

Mill Creek Mining & Developing Co., Inc., Bothell, Wash.; to buy and lease mining rights, quarries and mineral lands; $10,000. Incorporators are C. H. Nethaway, William Maloney and C. Gilchrest.

Alabama Aggregates Corp., Montgomery, Ala.; to deal in sand and gravel; capital stock, $2000. Officers are B. A. Whigham, president; Luther David, vice-president, and J. H. Whigham, secretary-treasurer.

Celo Mica Co., Spruce Pine, N. C.; to mine and dispose of mica and other minerals; authorized capital stock $40,000, subscribed stock $600. Incorporators are Ed Boone of Spruce Pine and C. H. Buckles and Lloyd Fortner of Micaville.

Personals

S. N. Peters, Philadelphia, Penn., sales manager of the Giant Portland Cement Co., has been elected a company director.

Curtis H. Matthews is working as supervisor at the Rhea G. Price stone quarry, Woodford street, Bowling Green, Ky.

Robert B. Henderson, president of Pacific Portland Cement Co., San Francisco, Calif., has been elected a vice-president of the National Association of Manufacturers for 1936.

Allan Grubb, for nine years field engineer for the Portland Cement Association in Washington and Idaho, has been promoted to district engineer, with headquarters at Seattle, Wash.

Erie L. Gale has been appointed assistant district sales manager for the territory served by the Des Moines plant of Pennsylvania-Dixie Cement Corp. His headquarters are Old Colony Bldg., Des Moines, Iowa.

Mrs. Victor N. Milnor, who assisted her husband in his business for several years, has, since his sudden death October 26, taken over management of the H. C. Milnor Sand Co., Knoxville, Tenn., and will continue its operation.

Obituaries

Fred C. Murphy, 52, vice-president of Illinois Electric Limestone Co., St. Louis, Mo., died January 3.

Joseph S. Reiter, 49, auditor for the Colorado Portland Cement Co., Denver, Colo., died December 10.

Alex M. Wagner, president of the Wagner Quarries Co., Sandusky, Ohio, died of pneumonia December 14. He was 61.

Frank J. Long, 31, superintendent of the West Roxbury Trap Rock Co. plant, West Roxbury, Mass., was killed recently when struck accidentally by a steam shovel bucket.

W. K. Smith, 26, manager of the Limestone Products Co., Racine, Wis., was killed when his car collided with a trailer truck on Highway 41 south of the Illinois state line November 22.

Albert Wells Ristine, former vice-president of the Southern Gypsum Co. and more recently connected with Mathieson Alkali Co., Saltville, Va., suddenly dropped dead at Roanoke, Va., December 14.

W. A. Dehner, 55, owner of the Dehner Concrete Products Co., Concordia, Kan., died suddenly in a Chicago, Ill., hotel room December 3. He had come to Chicago to attend a silo manufacturers' convention.

John Nathan Weil, Sr., 39, Alexandria, La., died suddenly at his home December 11. He was secretary-treasurer of the Alexandria Gravel Co., Inc., and owner and operator of the Builders Sand and Gravel Co.

Edwin Wilbur Rice, Jr., 73, honorary chairman of the board of directors of General Electric Co. and a pioneer in electrical development, died at his home in Schenectady, N. Y., November 25 after a long illness.

William W. Miller, manager of General Electric Co.'s industrial department, died in Schenectady, N. Y., December 22, following an operation for a ruptured appendix. He was 55 years old and had worked himself up from office boy.

E. E. Bonewitz, 45, consulting engineer and representative of the Portland Cement Association, died November 12 in Milwaukee, Wis., after a day's illness. He worked with the inland division of the association on waterworks and big building projects.

J. G. Obermier, 67, vice-president in charge of production and member of the board of directors of The Timken Roller Bearing Co., Canton, Ohio, died of pneumonia in Tucson, Ariz., December 28. He had been with the firm since 1912 and was responsible for much of its intensive development.

Cement

Beaver Portland Cement Co., Gold Hill, Ore., has renewed its lease of the California and Oregon Coast Railroad for two years. The company uses the road for hauling limestone from its quarry on Marble mountain.

Ash Grove Lime and Portland Cement Co. resumed operation of its Chanute, Kan., plant November 23.

Lawrence Portland Cement Co., New York, N. Y., has leased a major portion of the fifteenth floor at 150 Broadway for a long term.

Monarch Cement Co., Humboldt, Kan., resumed operation of its plant November 16 after a three months' period of inactivity.

Colorado Portland Cement Co. resumed operation November 16 for a few weeks at its Portland, Colo., plant.

Lehigh Portland Cement Co. resumed operation at its Tarrant, Ala., plant November 20 after a three-week shutdown occasioned through lack of coal during a coal strike.

Monolith Portland Midwest Co., Laramie, Wyo., closed its plant for the winter November 14. Shipments are being made from stock, and building repairs are under way.

Coulee d. ... contractors were accepting delivery on their order of two million barrels of cement late in November, keeping the **Superior Portland Cement Co.** plant at Concrete, Wash., busy.

Cement Products

Karl Paul Billner, founder and general manager of Aerocrete Corp. of Canada and New York and inventor of the vacuum process for extracting water from fresh concrete, has moved his offices from 224 East 38th St. to the R. C. A. Building, Rockefeller Center, New York City.

Manufacturers

Nordberg Manufacturing Co., Milwaukee, Wis., recently opened an office in Toronto, Ont., at 1110 Concourse Bldg., 100 Adelaide St., West, in charge of Max Theo. Knutzen. Announcement is also made of the promotion of Chief Engineer Rudolf Wintzer to consulting engineer, Emil Grieshaber, his chief assistant, now becoming chief engineer.

United Machinery Co., Portland, Ore., has changed its name to **Ramsey Machinery Co.**

Chain Belt Co., Milwaukee, Wis., recently named Western Material Co., Sioux Falls, S. D., as an exclusive distributor for Rex equipment in South Dakota.

General Electric Co., Schenectady, N. Y., terminated its unemployment compensation system December 31, simultaneously with the inauguration of the federal social security act. The company announces that vacations with pay for hourly paid employes, abolished several years ago, will be restored in 1936. Its board has elected Ira D. LeFeore comptroller to succeed S. L. Whitestone, who retired December 31.

Western Precipitation Co., Los Angeles, Calif., announces the formation of a Canadian organization with a Dominion charter which will go under the name of Precipitation Co. of Canada, Ltd., with offices at Dominion Square, 1010 St. Catherine St., West, Montreal.

Four Wheel Drive Auto Co., Clintonville, Wis., recently appointed H. W. Morton as manager of the Harrisburg, Penn., branch.

The Babcock & Wilcox Co., New York, N. Y., recently transferred the refractories division sales office for the Southeastern district from Atlanta to the Works at Augusta, Ga.

Lincoln Electric Co., Cleveland, Ohio, announces the opening of two new offices: One, at 923 S. Washington St., Peoria, Ill., is under the direction of W. I. Miskoe. The other, at Memphis, Tenn., is under the management of O. B. Farrell.

The Thermoid Rubber Co., Trenton, N. J., announces termination of the services of Lloyd Leaver, vice-president in charge of sales of the mechanical rubber goods division. Fred Matheis has been elected assistant vice-president, and S. H. Lyons has been appointed eastern manager of the mechanical rubber goods sales division.

Raymond Bros. Impact Pulverizer Co., Chicago, Ill., announces the appointment of J. F. Benton as sales engineer operating from the Chicago office and specializing in the phosphate rock and fertilizer field.

B. F. Goodrich Co., Akron, Ohio, initiated 112 employes into its Twenty-Year Service Club in December. A. C. Kelly, Chicago district manager, Walter F. Geissel, Des Moines district manager, and C. G. Morgan, Buffalo district mechanical division manager, were among this group.

Pennsylvania Pump and Compressor Co., Easton, Penn., has appointed Consulting Engineering Co., No. 1 Terminal Office Bldg., Carson St., Pittsburgh, Penn., as its representative in the Pittsburgh district.

Hamilton Rubber Manufacturing Co., Trenton, N. J., announces that Lloyd R. Leaver, formerly vice-president of the Mechanical Rubber Goods Division of the Thermoid Rubber Co., has joined its sales organization.

American Foundry Equipment Co., Mishawaka, Ind., gave each of its several hundred employes a 12-lb., Grade A, Christmas turkey December 24.

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Penn., announces that R. R. Davis has been promoted to manager of the advertising department, to succeed Ralph Leavenworth, who resigned January 1 to join Fuller & Smith & Ross of Cleveland, the agency which handles the Westinghouse account.

R. G. Le Tourneau, Inc., Peoria, Ill., is constructing a large addition to adjoin the original Peoria factory built last spring.

Pennsylvania Pump & Compressor Co., Easton, Penn., has appointed G. G. Van Tuyl, 18927 Winslow Road, Cleveland, Ohio, as Cleveland representative.

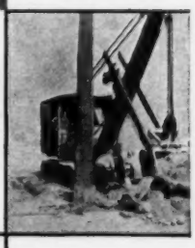
Trade Literature

Used Equipment. Bulletin 110 has been released. MISSISSIPPI VALLEY EQUIPMENT CO., St. Louis, Mo.

Transmission Machinery. Catalog 35, 348 pages, is a new release on material handling equipment and transmission machinery. DIAMOND IRON WORKS, Minneapolis, Minn.

Rock Drill. "Going Places" describes a new L-2 45 lb. rock drill. SULLIVAN MACHINERY CO., Claremont, N. H.

1936 JANUARY 1936

SUN	MON	TUES	WED	THUR	FRI	SAT
Let's go! Everybody off to a flying start on the New Year			1	2		4
5		7	8	OPEN HOUSE AT "AMERICAN HOIST" HEADQUARTERS— AT ROAD SHOW— —SAVE THE DATE		11
12	13		15	16	17	
19	ROAD SHOW STARTS		22	23	ROAD SHOW CLOSES	25
26	27	28	ORDER YOUR NEW "AMERICAN" NOW		31	

THE AMERICAN GOPHER

AMERICAN HOIST & DERRICK COMPANY
SAINT PAUL, MINNESOTA

AMERICAN Gopher SHOVELS
CRANES · DRAGLINES

"PENNSYLVANIA" *STEELBUILT* HAMMERMILL

Going "On the Line" to Modernize the Secondary Reduction—for the "long pull"!

"PENNSYLVANIA"

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PENN-LEHIGH PRIMARY ROLLS
PENN-BUCHANAN PRIMARY JAWS

"PENNSYLVANIA"

Secondary Hammermills, PENN-BUCHANAN Secondary Jaws, PENNSTEEL Secondary Rolls, and "PENNSYLVANIA" Coal Preparation Machinery offer selection from over 100 specialized types and sizes. *Steel-Built* for heavy duty in Cement, Lime, Gypsum, Aggregate and Road-Building Industries.

Tell us your needs when sending for Bulletins.

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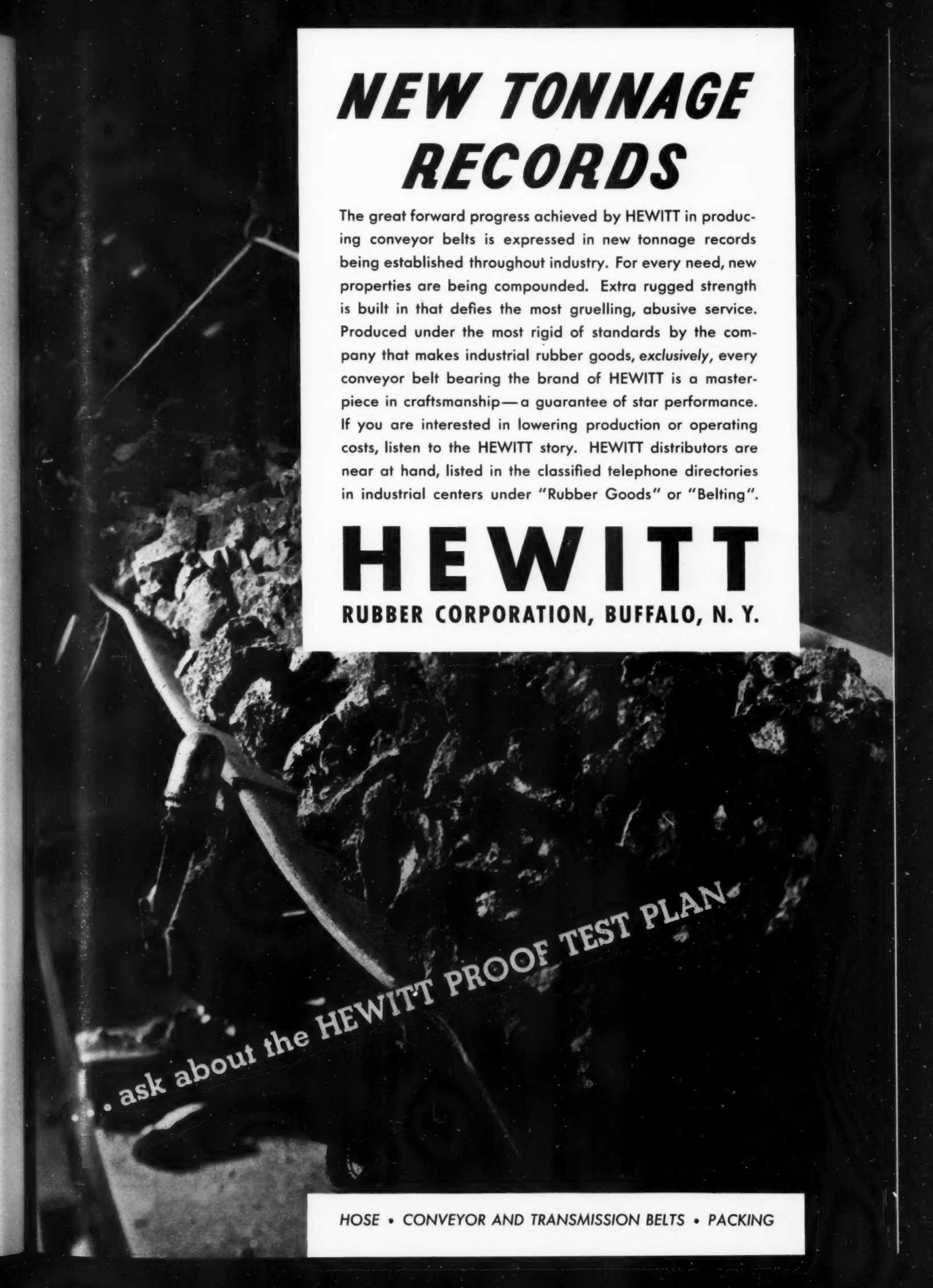

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The great forward progress achieved by HEWITT in producing conveyor belts is expressed in new tonnage records being established throughout industry. For every need, new properties are being compounded. Extra rugged strength is built in that defies the most gruelling, abusive service. Produced under the most rigid of standards by the company that makes industrial rubber goods, *exclusively*, every conveyor belt bearing the brand of HEWITT is a masterpiece in craftsmanship—a guarantee of star performance. If you are interested in lowering production or operating costs, listen to the HEWITT story. HEWITT distributors are near at hand, listed in the classified telephone directories in industrial centers under "Rubber Goods" or "Belting".

HEWITT

RUBBER CORPORATION, BUFFALO, N. Y.

HOSE • CONVEYOR AND TRANSMISSION BELTS • PACKING

for 1936 — the P&H PACEMAKERS

With P & H Ward Leonard Control

One of the two P & H Model 1200 machines that opened the quarry for the World's Largest Cement Mill at Brodhead, Pa. (National Portland Cement Co.)

Harnischfeger *Sets the Pace* Again

● They're the biggest of the new P & H Pacemakers—these new type Ward Leonard electric shovels—the first true one-man machines. Every operation in digging, travel, and turning is fully controlled by one operator.

They're true Pacemakers—setting a pace fully 15% faster. In these machines, as in other new P & H Pacemakers, greater strength with lower weight has been made possible through the extensive use of High Tensile Alloy steels and P & H-Welded construction. Lighter, stronger front-end equipment, far less counterweight, and complete rebalance of all machine units cuts out all excess weight, reduces inertia, makes possible faster swing and hoist speeds and more rapid crowding.

And there's more power in the new Ward Leonards, just as there is in the other new Pacemakers—more power and more efficient transmission of power—to make this the biggest producer of its size ever built.

Write today for full information on these new electric machines or on any of the smaller models listed at the left.

PACEMAKING PERFORMANCE IN EVERY SIZE

Regardless of the size or type of machine you're after, there's a P & H Pacemaker built to break records for production and low cost. Here are the 1936 Pacemakers. Ask for further information on the Model that meets your needs.

Model 100—⅜ yard
Model 150—½ yard
Model 300B—⅝ yard
Model 350—¾ yard
Model 450—1 yard
Model 500—1 yard
Model 600A—1 yard
Model 650—1¼ yards
Model 575—1¼-2 yards
Model 705—1½ yards
Model 765—2 yards
Model 780—2 yards
Model 800A—2½ yards
Model 810—2¾ yards
Model 850—2½-3 yards
Model 900—3½ yards
Model 900A—3½-4 yards
Model 1200—2 yards (P & H Ward Leonard)
Model 1250—2½ yards (P & H Ward Leonard)
Model 1300—3 yards (P & H Ward Leonard)
Model 1400—4 yards (P & H Ward Leonard)

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AIDING INDUSTRIAL RECOVERY

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• In the nation-wide effort for industrial recovery LAY-SET Preformed wire rope is playing an important part. Wherever it is necessary to have economy of operation, increased service from machinery, greater speed of production, or increased safety to workmen—there, LAY-SET is most appreciated. . . . Back in 1928 hundreds of operators found that LAY-SET Preformed handles easier, works better, lasts longer, gives greater dollar value. Since then literally thousands of operators, in every field, have learned the same thing. . . . It will pay you to investigate LAY-SET Preformed.

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Classified Directory of Advertisers in this Issue of ROCK PRODUCTS

For alphabetical index, see page 2

Abrasive Wheels
Manhattan Rubber Mfg., Div. of Raybestos - Manhattan, Inc.

Aggregate Admixture
Calcium Chloride Ass'n

Agitators, Thickeners and Slurry Mixers
Hardinge Company, Inc.
Polysius Corp.
F. L. Smidth & Co.

Airveyor
Fuller Co.

Air Compressors
Chicago Pneumatic Tool Co.
Curtis Pneumatic Machy. Co.
Fuller Co.
Nordberg Mfg. Co.
F. L. Smidth & Co.
Traylor Eng. & Mfg. Co.
Worthington Pump and Machy. Corp.

Air Filters
Fuller Co.

Air Hoists
Curtis Pneumatic Machy. Co.

Air Separators
Bradley Pulverizer Co.
Hardinge Company, Inc.
Polysius Corp.
Raymond Bros. Impact Pulv. Co.
Sturtevant Mill Co.
Universal Road Machy. Co.
Williams Patent Crusher & Pulv. Co.

Anti-Freeze Solution
Firestone Tire & Rubber Co.

Automatic Weighers
Richardson Scale Co.

Babbitt Metal
Joseph T. Ryerson & Son, Inc.

Backdiggers
Lima Locomotive Works, Inc. (Ohio Power Shovel Co.)

Backfillers
Bucyrus-Erie Co.
Harnischfeger Corp.
Lima Locomotive Works, Inc. (Ohio Power Shovel Co.)

Bagging Machinery
Richardson Scale Co.

Ball Bearings
S K F Industries, Inc.

Balls (Grinding, See Grinding Balls)

Balls (Tube Mill, etc.)
Allis-Chalmers Mfg. Co.
Hardinge Company, Inc.
Polysius Corp.
F. L. Smidth & Co.

Bar Benders and Cutters
Koehring Co.

Batchers
Butler Bin Co.
Fuller Company

Batteries
Firestone Tire & Rubber Co.

Bearings
Link-Belt Co.
Joseph T. Ryerson & Son, Inc.
S K F Industries, Inc.
Timken Roller Bearing Co.

Bearings (Anti-Friction)
S K F Industries, Inc.
Timken Roller Bearing Co.

Bearings (Roller)
S K F Industries, Inc.
Timken Roller Bearing Co.

Bearings (Tapered Roller)
Timken Roller Bearing Co.

Bearings (Thrust)
S K F Industries, Inc.
Timken Roller Bearing Co.

Belt Fasteners
Flexible Steel Lacing Co.

Belting
Earle C. Bacon, Inc.
Hewitt Rubber Corp.
Robins Conveying Belt Co.

Belt Lacing (Steel)
Flexible Steel Lacing Co.

Belting (Elevator and Conveyor)
Hewitt Rubber Corp.
Manhattan Rubber Mfg. Div. of Raybestos, Manhattan, Inc.

Belting (Metal, Conveyor, High and Low Temperature)
Wickwire-Spencer Steel Co.

Belting (V Type)
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Belting (Transmission)
Hewitt Rubber Corp.
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Belts (Fan)
Firestone Tire & Rubber Co.

Bin Gates
C. O. Bartlett & Snow Co.
Fuller Co.
Good Roads Machy. Corp.
Link-Belt Co.
Robins Conveying Belt Co.
Stephens-Adamson Mfg. Co.
Traylor Eng. & Mfg. Co.
Universal Road Machy. Co.

Bin-Dicator
Ripley Mfg. Co.

Bins
Blaw-Knox Co.
Butler Bin Co.
Good Roads Machy. Corp.
Traylor Eng. & Mfg. Co
Universal Road Machy. Co.

Blasting Machines
Atlas Powder Co.
Hercules Powder Co.

Blasting Supplies
Atlas Powder Co.
Hercules Powder Co.

Blasting Powder (See Powder, Blasting)

Blocks (Pillow, Roller Bearing)
Link-Belt Co.
S K F Industries, Inc.
Timken Roller Bearing Co.

Blocks (Sheave)
American Manganese Steel Co.
Sauerman Bros.

Boilers
Babcock & Wilcox Co.
Combustion Engineering Corp.

Brake Linings (Asbestos)
Firestone Tire & Rubber Co.
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Breakers (Primary)
Smith Engineering Works
Williams Patent Crusher & Pulv. Co.

Buckets (Clamshell, Grab, Orange Peel, etc.)
Blaw-Knox Co.
Harnischfeger Corp.
Hayward Company
Link-Belt Co.
Wellman Engineering Co. (G. H. Williams)

Buckets (Dragline and Slackline)
American Manganese Steel Co.
Blaw-Knox Co.
Bucyrus-Erie Co.
Wellman Engineering Co. (G. H. Williams)

Buckets (Dredging and Excavating)
Harnischfeger Corp.

Buckets (Elevator and Conveyor)
Cross Engineering Co.
Hendrick Mfg. Co.
Jeffrey Mfg. Co.
Link-Belt Co.
Polysius Corp.
Robins Conveying Belt Co.
Stephens-Adamson Mfg. Co.

Buggies (Dump)
R. G. Le Tourneau, Inc.

Bulldozers
Blaw-Knox Co.
Koehring Co.
R. G. Le Tourneau, Inc.

Bushings (Machined or Processed)
Manganese Steel Forge Co., Inc.

Cableways
Broderick & Bascom Rope Co.
General Electric Co.
Link-Belt Co.
Macwhyte Co.
John A. Roebling's Sons Co.
Sauerman Bros.
Williamsport Wire Rope Co.

Calcining Kettles (Gypsum)
J. B. Ehrsam & Sons Mfg. Co.

Calcium Chloride
Calcium Chloride Ass'n.

Cap Crimpers and Fuse Cutters
Ensign-Bickford Co.

Caps (Blasting)
Atlas Powder Co.
Hercules Powder Co.

Car Pullers
Link-Belt Co.
Robins Conveying Belt Co.
Stephens-Adamson Mfg. Co.

Carriers
Barber-Greene Co.

Carriers (Belt Conveyor)
Stephens-Adamson Mfg. Co.

Carryalls
R. G. Le Tourneau, Inc.

Castings
Babcock & Wilcox Co.
Eagle Iron Works (Grey Iron)
Link-Belt Co.
Timken Roller Bearing Co.

Cement Making Machinery
F. L. Smidth & Co.

Cement Process
Cement Process Corp.

Cement Pumps
Fuller Co.
F. L. Smidth & Co.

Central Mixing Plants
Blaw-Knox Co.
Butler Bin Co.

Chain (Dredge and Steam Shovel)
Bucyrus-Erie Co.
Jeffrey Mfg. Co.

Chain (Elevating and Conveying)
American Manganese Steel Co.
Chain Belt Co.
Jeffrey Mfg. Co.
Link-Belt Co.
Stephens-Adamson Mfg. Co.

Chain Drives
Chain Belt Co.

Chain Systems (Kilns)
F. L. Smidth & Co.

Chemicals
Calcium Chloride Ass'n.

Chute Lining
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Chutes and Chute Liners
American Manganese Steel Co.
Earle C. Bacon, Inc.
Cross Engineering Co.

Chutes for Minimizing Segregation
Robins Conveying Belt Co.

Clarifiers
Hardinge Company, Inc.

Classifiers
Hardinge Co., Inc.
Knickerbocker Co.
Link-Belt Co.

Clay Working Machinery
Bonnot Company

Clips (Wire Rope)
Broderick & Bascom Rope Co.
Macwhyte Co.
Williamsport Wire Rope Co.

Coal Crushers and Rolls
Williams Patent Crusher & Pulv. Co.

Coal Pulverizing Equipment
Babcock & Wilcox Co.
Bonnot Company
Bradley Pulverizer Co.
Gruendler Crusher & Pulv. Co.
Hardinge Company, Inc.
Pennsylvania Crusher Co.
Polysius Corp.
Raymond Bros. Impact Pulv. Co.
F. L. Smidth & Co.
Williams Patent Crusher & Pulv. Co.

Compressed Air Rock Drills
Chicago Pneumatic Tool Co.

Compressors (See Air Compressors)

Concrete Slab Raising Equipment (Mud-Jack)
Koehring Co.

Conveyor Belting (See Belting)

Conveyor Idlers and Rolls
Barber-Greene Co.
C. O. Bartlett & Snow Co.
Chain Belt Co.
Jeffrey Mfg. Co.
Link-Belt Co.
Robins Conveying Belt Co.

Conveyors and Elevators
Earle C. Bacon, Inc.
Barber-Greene Co.
Fuller Company
Good Roads Machy. Corp.
Jeffrey Mfg. Co. (Vibrating)
Lewistown Fdy. & Mach. Co.
Link-Belt Co.
Polysius Corp.
Robins Conveying Belt Co.
F. L. Smidth & Co.
Smith Engineering Works
Stephens-Adamson Mfg. Co.
Sturtevant Mill Co.
Traylor Eng. & Mfg. Co.
Universal Road Machy. Co.
Williams Patent Crusher & Pulv. Co.

Have you tried the new Gulflube Motor Oil for your automotive equipment? It is the only premium quality motor oil made by the Multi-Sol process and sold at "regular" price.

Rely On Gulf Quality Lubricants to KEEP MAINTENANCE COSTS DOWN

HERE is one big advantage in using Gulf lubricants for your equipment: *A Gulf engineer recommends exactly the right lubricant for each piece of equipment you operate—the lubricant which will help your equipment stand up in hard, gruelling service.*

This scientific selection of lubricants is worth real money to you. Careful attention to lubrication often doubles the life of machines and parts which suffer from friction and wear when lubricants of the wrong type or quality are used.

Gulf lubricants will keep your maintenance costs down, will help your equipment operate continuously and with a profit. Use Gulf oils and greases —and get more for your lubrication dollar.

Enjoy Gulf's new radio program featuring Phil Baker in "The Great American Tourist" over CBS Sunday evenings 7:30 E.S.T.

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Conveyors (Screw)
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Conveyors (Spiral)
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Conveyoweighs
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Coolers (See Kilns and Coolers Rotary)

Correcting Basins
F. L. Smidth & Co.

Couplings (Flexible and Shaft)
Chain Belt Co.
Link-Belt Co.

Couplings (Hose, Pipe, etc.)
Hewitt Rubber Corp.

Cranes (Clamshell)
Bay City Shovels, Inc.
Bucyrus-Erie Co.
Harnischfeger Corp.
Koehring Co.

Cranes (Air Powered)
Curtis Pneumatic Machy. Co.

Cranes (Caterpillar)
American Hoist & Derrick Co.

Cranes (Crawler and Locomotive)
American Hoist & Derrick Co.
Bay City Shovels, Inc.
Bucyrus-Erie Co.
Harnischfeger Corp.
Koehring Co.
R. G. Le Tourneau, Inc.
Lima Locomotive Works, Inc (Ohio Power Shovel Co.)
Link-Belt Co.
Michigan Power Shovel Co.
Thew Shovel Co. (Electric, Gasoline and Steam)

Cranes (Excavator
Koehring Co.

Cranes (Overhead Traveling Electric)
Harnischfeger Corp.

Crusher Parts
American Manganese Steel Co.
American Pulverizer Co.
Earle C. Bacon, Inc.
Pennsylvania Crusher Co.

Crushers (Hammer)
American Pulverizer Co.
C. O. Bartlett & Snow Co.
Dixie Machy. Mfg. Co.
Gruendler Crusher & Pulv. Co.
Jeffrey Mfg. Co.
Pennsylvania Crusher Co.
Sturtevant Mill Co.
Williams Patent Crusher & Pulv. Co.

Crushers (Jaw and Gyratory)
Allis-Chalmers Mfg. Co.
Earle C. Bacon, Inc. (Jaw))
Birdsboro Steel Foundry & Mach. Co.
C. G. Buchanan Co., Inc.
Good Roads Machy. Corp. (Jaw)
Gruendler Crusher & Pulv. Co.
Lewistown Fdy. & Mach. Co.
Nordberg Mfg. Co.
Pennsylvania Crusher Co.
Polysius Corp.
Smith Engineering Works
Traylor Eng. & Mfg. Co.
Universal Road Machy. Co.
Williams Patent Crusher & Pulv. Co.

Crushers (Reduction)
Earle C. Bacon, Inc.
Bonnot Company
Jeffrey Mfg. Co.

Crushers (Ring)
American Pulverizer Co.

Crushers (Roll)
American Pulverizer Co.
Gruendler Crusher & Pulv. Co.
Williams Patent Crusher & Pulv. Co.

Crushers (Rotary)
American Pulverizer Co.
J. B. Ehrsam & Sons Mfg. Co.
Polysius Corp.

Crushers (Single Roll)
American Pulverizer Co.
Gruendler Crusher & Pulv. Co.
Jeffrey Mfg. Co.
Link-Belt Co.
McLanahan & Stone Corp.
Pennsylvania Crusher Co.

Crushing Rolls
Allis-Chalmers Mfg. Co.
Earle C. Bacon, Inc.
Babcock & Wilcox Co.
Birdsboro Steel Foundry & Mach. Co.
C. G. Buchanan Co., Inc.
Jeffrey Mfg. Co.
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Sturtevant Mill Co.
Traylor Eng. & Mfg. Co.

Dedusters
Blaw-Knox Co.

Derricks and Derrick Fittings
American Hoist & Derrick Co.
Harnischfeger Corp.

Derrick Fittings
American Hoist & Derrick Co.

Detonators
Atlas Powder Co.
Hercules Powder Co.

Diaphragms (Pump)
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan. Inc.

Dippers (Manganese Steel)
American Manganese Steel Co.

Dippers and Teeth (Steam Shovel)
American Manganese Steel Co.
Bucyrus-Erie Co.
The Frog, Switch & Mfg. Co.
Thew Shovel Co.

Dirt Moving Equipt. (Dumptor)
Koehring Co.

Ditchers
Barber-Greene Co.
Bucyrus-Erie Co.
Harnischfeger Corp.

Draglines
Bay City Shovels, Inc.
Bucyrus-Erie Co.
Harnischfeger Corp.
Link-Belt Co.
Thew Shovel Co.

Draglines (Gasoline or Electric)
Koehring Co.

Dragline Excavators
Bay City Shovels, Inc.
Bucyrus-Erie Co.
Harnischfeger Corp.
Lima Locomotive Works, Inc. (Ohio Power Shovel Co.)
Michigan Power Shovel Co.
Thew Shovel Co. (Electric, Gasoline and Steam)

Dragline Cableway Excavators
American Hoist & Derrick Co.
Bucyrus-Erie Co.
Good Roads Machy. Corp.
Link-Belt Co.
Sauerman Bros.

Dragline Excavators (Walking)
Bucyrus-Monighan Co.

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Dredges
American Hoist & Derrick Co.
Bucyrus-Erie Co.
Hayward Co.
Hetherington & Berner, Inc.
Morris Machine Works

Dredging Sleeves
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan. Inc.

Drill Bits
Timken Roller Bearing Co.

Drills
Bucyrus-Erie Co.
Timken Roller Bearing Co.

Drills (Diamond Core)
Chicago Pneumatic Tool Co.

Drills, Hammer (See Hammer Drills)

Drills (Rock)
Chicago Pneumatic Tool Co.

Drives (Short Center)
Allis-Chalmers Mfg. Co.
Earle C. Bacon, Inc.

Dryers
Allis-Chalmers Mfg. Co.
Babcock & Wilcox Co.
Bonnot Company
Combustion Engineering Corp
Hardinge Company, Inc.
Polysius Corp.
Traylor Eng. & Mfg. Co.

Dumptors
Koehring Co.

Dust Arresters
American Foundry Equipt. Co.

Dust Collecting Systems
Allis-Chalmers Mfg. Co
American Foundry Equipt. Co.
Blaw-Knox Co.
Polysius Corp.

Dust Conveying Systems
Fuller Company

Dynamite
Atlas Powder Co.
Hercules Powder Co.

Electric Cables and Wires
John A. Roebling's Sons Co.

Electric Mine Hoists
Nordberg Mfg. Co.

Electric Power Equipment
Allis-Chalmers Mfg. Co.
General Electric Co.

Elevator Belting (See Belting)

Emery Mills
Sturtevant Mill Co.

Engineers
Bonnot Company
Butler Bin Co.
Fuller Co.
Hetherington & Berner, Inc.
Kritzer Co.
Productive Equipment Corp.
Robins Conveying Belt Co.
F. L. Smidth & Co.
Sturtevant Mill Co.
Williams Patent Crusher & Pulv. Co.

Engines (Diesel)
Chicago Pneumatic Tool Co.
Nordberg Mfg. Co.

Engines (Gasoline, Kerosene and Oil)
American Hoist & Derrick Co.

Engines (Steam)
American Hoist & Derrick Co.
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Excavators (Crawling Tractor)
Koehring Co.

Excavators (Dragline)
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Koehring Co.

Explosives
Atlas Powder Co.
Hercules Powder Co.

Fans
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Fans (Exhaust)
Jeffrey Mfg. Co.

Feeders
Babcock & Wilcox Co. (Pulverized Coal)
Earle C. Bacon, Inc.
Fuller Co. (Cement and Pulverized Material)
Hardinge Company, Inc.
Jeffrey Mfg. Co. (Pan and Tube)
Robins Conveying Belt Co.
Ross Screen & Feeder Co. (Chain)
Schaffer Poidometer Co. (Weighing)
Smith Engineering Works (Plate)

Flights
Cross Eng. Co.

Furnaces
Combustion Engineering Corp.

Fuses (Detonating and Safety)
Ensign-Bickford Co.

Fuses (Electrical)
General Electric Co.

Galvanized Wire Strand
Macwhyte Co.

Gaskets
Hewitt Rubber Corp.
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Gasoline
Socony-Vacuum Oil Co., Inc.
Texas Company

Gears and Pinions
Earle C. Bacon, Inc.
General Electric Co.
Link-Belt Co.

Gears (Spur, Helical & Worm)
Jeffrey Mfg. Co.

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Hayward Co.

Grease
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Socony-Vacuum Oil Co., Inc.
Texas Company

Grinding Balls
Babcock & Wilcox Co.
Jeffrey Mfg. Co.

Grizzlies
American Manganese Steel Co.
Good Roads Machy. Corp.
Jeffrey Mfg. Co. (Vibrating)
Productive Equipment Corp.
Robins Conveying Belt Co.
Smith Engineering Works
Traylor Eng. & Mfg. Co.

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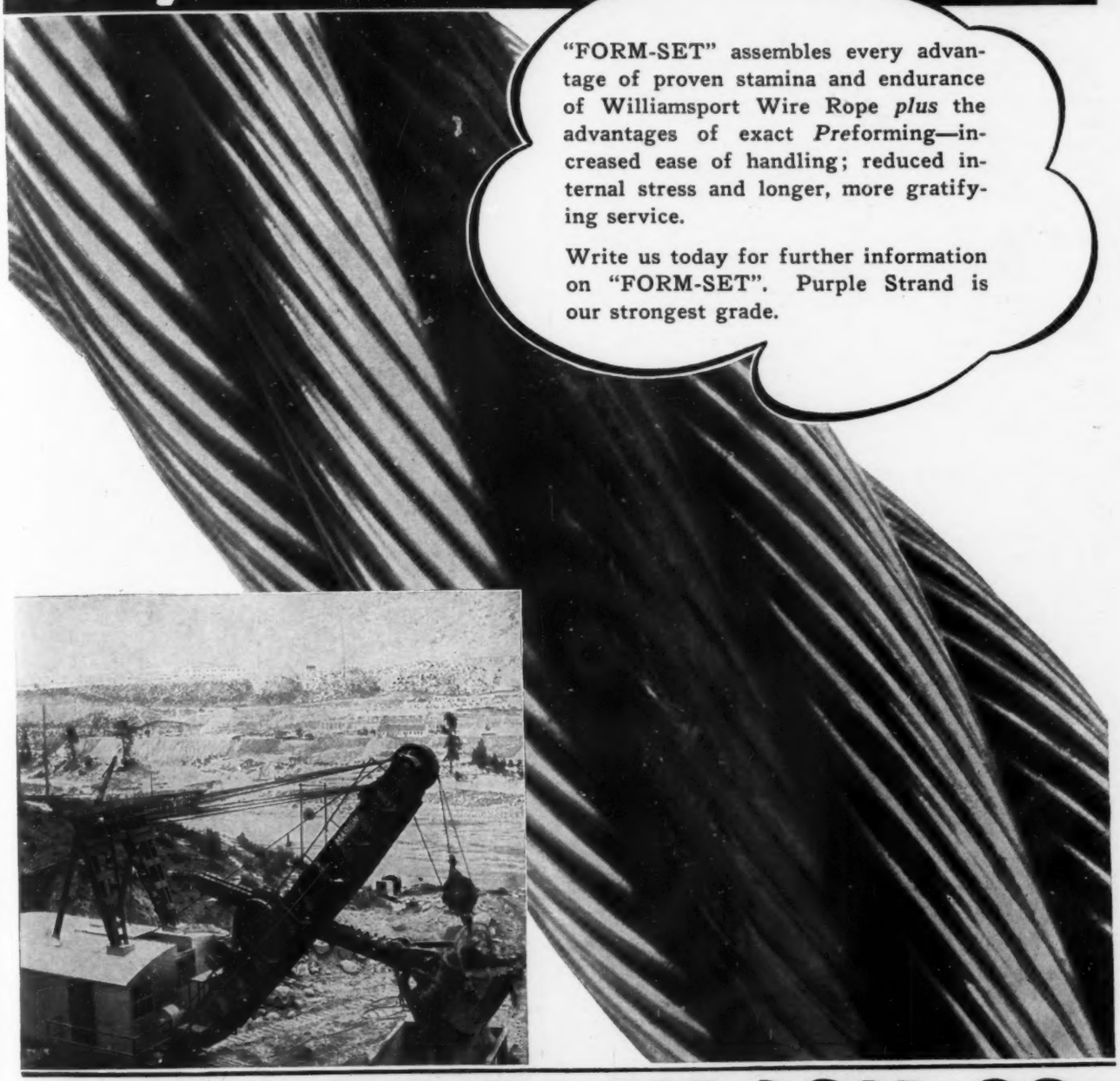

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Harnischfeger Corp.
Link-Belt Co.

Hooks
American Hoist & Derrick Co.
Macwhyte Co.

Hose (Water, Steam, Air Drill, Pneumatic, Sand Suction and Discharge)
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Hewitt Rubber Corp.
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Hydrators
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Indicators (Bin)
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Insulation (Electric)
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Kilns (Shaft)
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Ensign-Bickford Co.

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Linings (Rubber for Ball and Tube Mills, Tank and Pipe)
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

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Jeffrey Mfg. Co.
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Stephens-Adamson Mfg. Co.
Universal Road Machy. Co.

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Plymouth Locomotive Works

Locomotives (Diesel-Electric)
The Fate-Root-Heath Co.
Plymouth Locomotive Works

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Jeffrey Mfg. Co.

Locomotives (Gas-Electric)
The Fate-Root-Heath Co.
Plymouth Locomotive Works

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Lima Locomotive Works, Inc.

Locomotives (Oil-Electric)
The Fate-Root-Heath Co.
Plymouth Locomotive Works

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General Electric Co.
Jeffrey Mfg. Co.

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General Electric Co.
Lima Locomotive Works, Inc.

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Smith Engineering Works

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Broderick & Bascom Rope Co (Wire Rope)
Gulf Refining Co.
Macwhyte Co.
Socony-Vacuum Oil Co., Inc.
Texas Company

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Harrington & King Perforating Co.

Magnets
General Electric Co.

Magnetic Pulleys
Birdsboro Steel Foundry & Mach. Co.
C. G. Buchanan Co., Inc.

Manganese Steel Castings
American Manganese Steel Co.
The Frog, Switch & Mfg. Co.

Manganese Steel Parts
American Manganese Steel Co.
Manganese Steel Forge Co., Inc.

Manganese Steel (Plates and Sheets)
Manganese Steel Forge Co., Inc.

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Jeffrey Mfg. Co.

Mechanical Rubber Goods
Firestone Tire & Rubber Co.
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Mill Liners and Linings (Iron for Ball and Tube Mills)
Babcock & Wilcox Co.
Hardinge Company, Inc.
Jeffrey Mfg. Co.
F. L. Smidth & Co.

Mills, Grinding (Ball, Tube, etc.) (See also Crushers, Hammer)
Allis-Chalmers Mfg. Co.
American Pulverizer Co.
Bonnot Company
Bradley Pulverizer Co.
Gruendler Crusher & Pulv. Co.
Hardinge Co., Inc.
Knickerbocker Co.
Polysius Corp.
Raymond Bros. Impact Pulv Co.
F. L. Smidth & Co.
Traylor Eng. & Mfg. Co.
Williams Patent Crusher & Pulv. Co.

Mine Car Hitchings
Macwhyte Co.

Mixers (Commercial Concrete)
Jaeger Machine Co.

Mixers (Concrete)
Gruendler Crusher & Pulv. Co.
Koehring Co.

Motors and Generators (Electric Units)
Allis-Chalmers Mfg. Co.
General Electric Co.
Harnischfeger Corp.

Oil Burners
Babcock & Wilcox Co.
F. L. Smidth & Co.

Oils (Lubricating)
Gulf Refining Co.
Socony-Vacuum Oil Co., Inc.
Texas Company

Overhead Traveling Cranes
Curtis Pneumatic Machy. Co.

Packings (Pump, Valve, etc.)
Hewitt Rubber Corp.
Manhattan Rubber Mfg. Div. of Raybestos - Manhattan, Inc.

Paint (Asphalt)
Texas Company

Pavers (Concrete)
Koehring Co.

Perforated Metal
Chicago Perforating Co.
Cross Engineering Co.
Harrington & King Perforating Co.
Hendrick Mfg. Co.
Wickwire-Spencer Steel Co.

Plates
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Poidometers
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Portable Conveyors
Barber-Greene Co.
Fuller Company
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Robins Conveying Belt Co.

Portable Crushing and Screening Unit
Good Roads Machy. Corp.
Smith Engineering Works
Williams Patent Crusher & Pulv. Co.

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Jeffrey Mfg. Co.

Powder (Blasting)
Atlas Powder Co.
Hercules Powder Co.

Power Transmission Equipment
S K F Industries, Inc.

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Pulverizer Parts
American Manganese Steel Co.

Pulverizers (See also Crushers, Mills, etc.)
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American Pulverizer Co.
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Dixie Machy. Mfg. Co.
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F. L. Smidth & Co.
Sturtevant Mill Co.
Universal Road Machy. Co.
Williams Patent Crusher & Pulv. Co.

Pumps (Air Lift)
Fuller Company

Pumps (Cement)
Fuller Company

Pumps (Cement Slurry)
American Manganese Steel Co.
Morris Machine Works
Polysius Corp.
F. L. Smidth & Co.
A. R. Wilfley & Sons

Pumps (Centrifugal)
Allis-Chalmers Mfg. Co.
Hetherington & Berner, Inc.
Kansas City Hay Press Co.
Morris Machine Works
A. R. Wilfley & Sons

Pumps (Dredging)
American Manganese Steel Co.
Bucyrus-Erie Co.
Morris Machine Works
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Pumps (Pulverized Coal)
Babcock & Wilcox Co.

Pumps (Sand and Gravel)
Allis-Chalmers Mfg. Co.
American Manganese Steel Co.
Hetherington & Berner, Inc.
Kansas City Hay Press Co.
Morris Machine Works
A. R. Wilfley & Sons

Railways (Electric)
General Electric Co.

Railway Equipment
General Electric Co.

Ready Mixed Concrete Plants
Blaw-Knox Co.
Butler Bin Co.

Ready Mixed Concrete (Truck Mixer Bodies)
Blaw-Knox Co.

Reinforcement Fabric (Concrete)
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Road Binder
Calcium Chloride Ass'n.

Road Machinery
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Wickwire-Spencer Steel Co.

Roller Bearings
S K F Industries, Inc.
Timken Roller Bearing Co.

Roofing (Ready to Lay)
Texas Company

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STABILIZE YOUR BUSINESS WITH STABILIZED MIX

Your Greatest Opportunity in Years!

ROAD officials agree that stabilized mix is the answer to the gravel and stone road problem. Commercial production is the only means by which cities and counties can take immediate and extensive advantage of this advanced method of road building. It provides a dustless, hard surface year-round highway, and costs but little more than loose, dusty gravel.

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Most of the Work Can be Done in Slow Times

In plant-mix soil stabilization, you not only utilize materials often classed as waste, but you can also utilize waste man power and equipment time. You simply stock pile your finer materials, which have been tested, and when orders come, mix them with calcium chloride and the soil fractions needed to complete the proper mixture.

Gravel Pits, Quarries, Slag Producers Can All Supply This New Material

Soil stabilization formulae are available for the use of gravel, slag and stone. Each type of aggregate may be blended with other necessary soil factors to secure proper results. Much of the needed equipment is already in use in the handling of aggregates. Additional needed equipment is not costly. The market is tremendous, growing at a rapid rate. Aggregate producers who have entered this field are busy and enthusiastic.

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CALCIUM CHLORIDE

FOR STABILIZING ROAD SURFACES

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Sand and Gravel Screening and Washing Equipment
Universal Road Machy. Co.

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Smith Engineering Works

Sand Settling Tanks
Jeffrey Mfg. Co.
Link-Belt Co.
Smith Engineering Works

Scales (Automatic Proportioning)
Richardson Scale Co.

Scales (Cement)
Richardson Scale Co.

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R. G. Le Tourneau, Inc.
Link-Belt Co.
Sauerman Bros.

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Allis-Chalmers Mfg. Co.
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C. O. Bartlett & Snow Co.
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Cleveland Wire Cloth & Mfg. Co.
Cross Engineering Co.
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Williams Patent Crusher & Pulv. Co.

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C. G. Buchanan Co., Inc.

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Shovels, Power (Steam, Gas, Electric, Diesel, Oil)
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Bucyrus-Erie Co.
Harnischfeger Corp.
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Lima Locomotive Works, Inc. (Ohio Power Shovel Co.)
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Robins Conveying Belt Co.

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A. Leschen & Sons Rope Co.
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Joseph T. Ryerson & Son, Inc.

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Timken Roller Bearing Co.

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Timken Roller Bearing Co.

Steel (Special Analysis)
Timken Roller Bearing Co.

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Combustion Engineering Corp.
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Jeffrey Mfg. Co.
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Firestone Tire & Rubber Co.

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Truck Bodies (Ready Mixed Concrete)
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Universal Road Machy. Co.

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Combustion Engineering Corp.

Weigh-Mix
Koehring Co.

Weighing Equipment
Richardson Scale Co.
Schaffer Poidometer Co.

Welding and Cutting Apparatus
General Electric Co.
Harnischfeger Corp.

Welding Rod
Joseph T. Ryerson & Son, Inc.

Welding Wire
John A. Roebling's Sons Co.

Wire (Flat, Round, Square or Special Shapes)
Wickwire-Spencer Steel Co.

Wire (Manganese Steel)
Manganese Steel Forge Co., Inc.

Wire (Piano and Music)
Wickwire-Spencer Steel Co.

Wire Cloth
Audubon Wire Cloth Corp.
Cleveland Wire Cloth & Mfg. Co.
Ludlow-Saylor Wire Co.
Manganese Steel Forge Co., Inc.
National Wire Cloth Co.
John A. Roebling's Sons Co.
Wickwire-Spencer Steel Co.

Wire Rope
American Cable Co., Inc.
Broderick & Bascom Rope Co.
Hazard Wire Rope Co.
A. Leschen & Sons Rope Co.
Macwhyte Co.
John A. Roebling's Sons Co.
Wickwire-Spencer Steel Co.
Williamsport Wire Rope Co.

Wire Rope Fittings
American Cable Co., Inc.
Broderick & Bascom Rope Co.
Hazard Wire Rope Co.
A. Leschen & Sons Rope Co.
Macwhyte Co.
John A. Roebling's Sons Co.
Williamsport Wire Rope Co.

Wire Rope (Non-Corrosive)
Macwhyte Co.

Wire Rope (Monel Metal)
Macwhyte Co.

Wire Rope Slings (See Slings, Wire Rope)

Wire Rope Sockets (See Sockets, Wire Rope)

Winchell Library of Geology

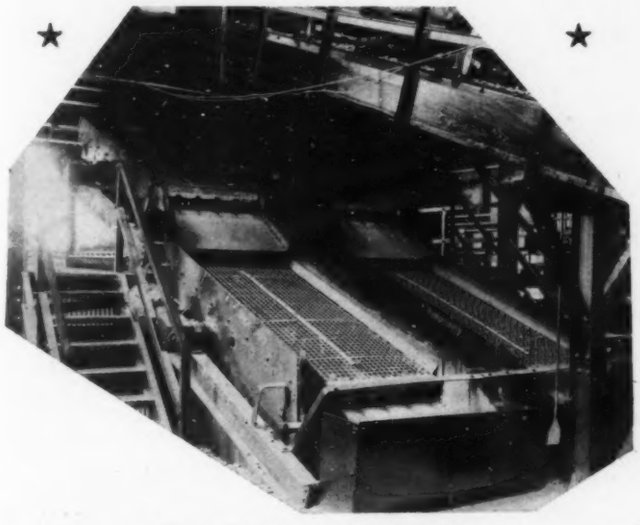
Are You Bothered by Impurities in Your Sand?

If So, Investigate,

THE SIMPLICITY D'CENTEGRATOR

Three years of successful large scale operations, removing impurities from sand in a New York Plant.

Write for complete information or call at our Booth.



Four 4' x 8' Double Decks in Stone Plant.

Operators—Write for dependable data and latest bulletin. Read what our users say regarding savings effected by the installation of SIMPLICITY SCREENS. There is a size to meet your requirements.

SIMPLICITY
The Large Capacity Positive Action GYRATING SCREEN

Every claim made for SIMPLICITY Gyrating Screens is backed by the production records in hundreds of installations during the past fourteen years. These records show greater capacities — increased profits — lower power consumption and minimum upkeep expense. You, too, will appreciate and profit by the positive action—rubber cushioned power and no blind features of SIMPLICITY Gyrating Screens.

SIMPLICITY ENGINEERING COMPANY
DURAND, MICHIGAN

For Canada: Waterous Limited, Brantford, Ontario

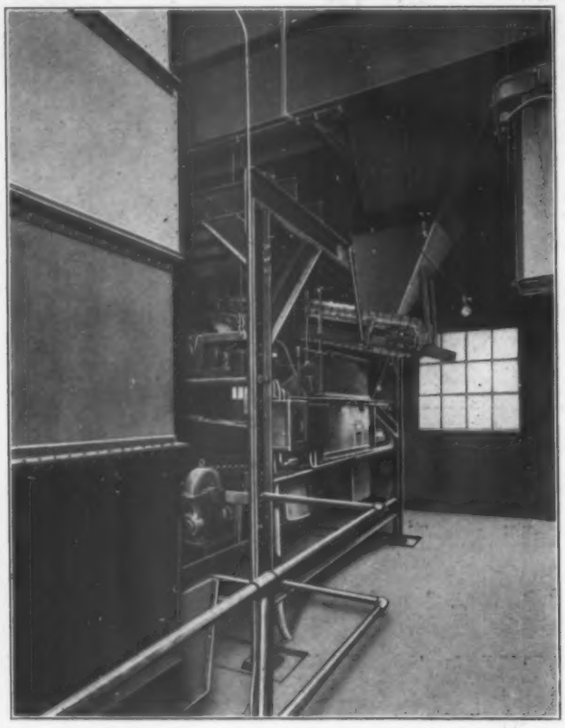
SAUERMAN
LONG RANGE MACHINES

DRAG SCRAPERS SLACKLINE EXCAVATORS

POWERFUL, economical machines are these Sauerman Drag Scrapers and Slackline Excavators. They are able to span an area 1,000 ft. or more in width and convey materials from any point in this area at a rapid rate. One man handles the entire operation.

The sizes of Sauerman machines range from portable units for small pit operations up to huge machines with capacities of 600 tons per hour. There is a special type for underwater excavation, another for digging from a bank, another for storing and reclaiming, and so on. Tell us your problem and we will mail you a booklet describing the type of machine that meets your requirements.

SAUERMAN BROS., 430 S. Clinton Street, Chicago



A combination of two CONVEY-O-WEIGHS of steel apron type used to weigh and proportion clinker and gypsum at a midwest cement plant.

YOUR INVESTMENT ALWAYS PROTECTED

RICHARDSON CONVEY-O-WEIGHS assure the accurate automatic weighing, proportioning and intimate mixing of loose raw materials.

The CONVEY-O-WEIGH is self-feeding and self-regulating regardless of the manner in which material is brought to it for weighing.

Inasmuch as elongated or extended streams of weighed materials are virtually poured into each other and as the discharge of each CONVEY-O-WEIGH can be so timed as to spread one weighed material over another—the result is an exceedingly intimate mixture of weighed materials prior to their introduction to a mixing machine, furnace, kiln or other apparatus.

If the supply of any one of the materials gives out, the CONVEY-O-WEIGH handling that particular ingredient will stop and automatically cause all the other CONVEY-O-WEIGHS in the system—whether they have materials or not—to cease functioning—thereby providing self-regulation and preventing spoiled mixes. Write for complete details.

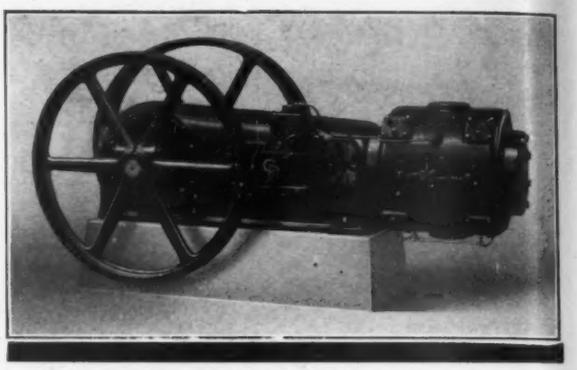
•

RICHARDSON SCALE COMPANY

CLIFTON - - - NEW JERSEY

TYPE T HORIZONTAL SINGLE-STAGE AIR COMPRESSOR

Double-acting; water-cooled; arranged for belt and direct-connected motor drive; for permanent and semi-permanent installation; capacities from 89 to 1293 cu. ft. per min.



A PROMISE...FULFILLED

New . . . modern . . . smoothly "streamlined" . . . Type T Compressor gives outward promise of the high efficiencies within . . . a promise that is generously fulfilled by such salient features as:

- SIMPLATE VALVES
- LARGE, SMOOTH AIR PASSAGES
- CYLINDER AND HEADS LIBERALLY WATER-JACKETED
- TAPERED ROLLER MAIN BEARINGS
- CYLINDER, CROSSHEAD FACES AND CROSS-HEAD GUIDES GROUND TO SIZE
- WEDGE-ADJUSTABLE CONNECTING ROD
- INLET VALVE UNLOADING SYSTEM
- DOUBLE-COUNTERWEIGHTED CRANKSHAFT
- COMPLETELY ENCLOSED FRAME WITH OIL-TIGHT AND DUST-PROOF COVERS

How and *why* these and other features of the Type T Air Compressor contribute to its high operating efficiency, its long life and its low maintenance cost, are fully described and illustrated in Bulletin No. 728. Send for your copy . . . today.

CHICAGO PNEUMATIC TOOL CO.

6 EAST 44th STREET NEW YORK, N. Y.

Manufacturers of

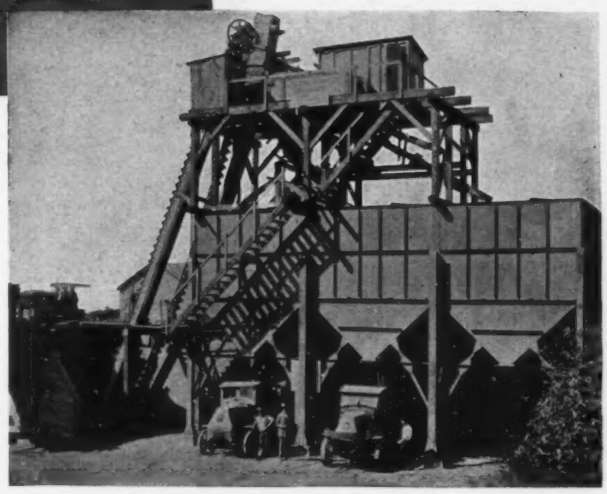
AIR & GAS COMPRESSORS
ROCK DRILLS
DIESEL ENGINES
ELECTRIC TOOLS
PNEUMATIC TOOLS
VACUUM PUMPS & CONDENSERS
OIL WELL ROCK BITS
REAMERS & TOOL JOINTS

Butler Central Mixing Plant for production of ready-mixed concrete.

Equip for 1936 profits

with BUTLER BINS and BATCHERS

Better business in 1936 means greater opportunities for profit—if your plant is equipped for speedy, low-cost, trouble-free operation. Recent developments in Butler Bins, Batchers and Central Mixing Plants provide new ways to speed up production, increase accuracy and cut costs for Material Yards, Sand and Gravel Plants, and Central or Transit Mixing Plants.



A battery of Butler unit-type bins for Sand and Gravel Plants.

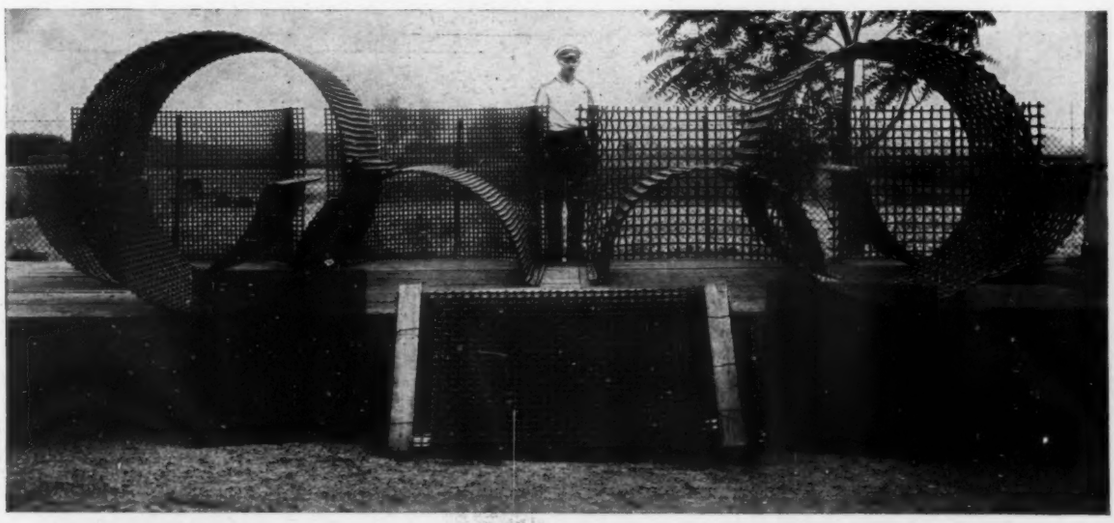
See these new Butler achievements at the 1936 Road Show, Booth No. F-29, and consult Butler engineers on plant modernizing problems.

BUTLER BIN COMPANY

WAUKESHA, WISCONSIN

Distributors in over 50 Cities

BUTLER *Steel* **BINS**



ROL-MAN

TRUE MANGANESE STEEL

Champions for Durability in ANY Screen Application

True Manganese Steel teamed with Patented Double Lock Mesh Weave (illustrated in borders on each side of adv.), challenges the toughest screening conditions anywhere . . . You know how much accurate screening tonnage you are getting from your present screens. Try the justly famous Rol-Man Screen and compare the results on a cost per ton basis . . . Send for performance facts and a quotation; prompt shipments.

MANGANESE STEEL FORGE CO., CASTOR AVENUE & BATH STREET, PHILADELPHIA, PA.

Audubon Wire Cloth Corp., a subsidiary of the same address, manufactures Vibraloy Screens—"Special" Quality at "Standard" Prices; also Mesh, Filter and Flexible Spiral Woven Wire Cloth. Send for Catalog 40-4.

CONVEYING
SCREENING
WASHING
EQUIPMENT

Complete Plants

Designed - Equipped - Erected

For More Than Thirty Years many of the best and most efficient plants have been designed and built by Stephens-Adamson, or have been equipped with Stephens-Adamson units.

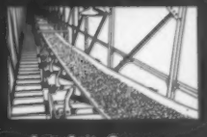
S-A engineers are always on the alert to develop new and better methods for washing, screening and handling sand, gravel, stone and cement.

New and improved units are constantly being introduced to produce better, cleaner material and to permit greater output at lower cost.

Check This List and write for details:

- Belt Conveyors
- Belt Conveyor Carriers
- Bucket Elevators
- Feeders
- Grizzlies
- Vibrator Screens
- Revolving Screens
- Washers & Classifiers
- Gates, Chutes & Spouts
- Complete Plants

Stephens-Adamson Mfg. Co.
57 Ridgeway, Aurora, Illinois
Los Angeles, Calif. — Belleville, Ontario


S-A Belt Conveyor

STEPHENS-ADAMSON MFG. CO.
Engineers - Manufacturers - Contractors

S-A Gravel Plant

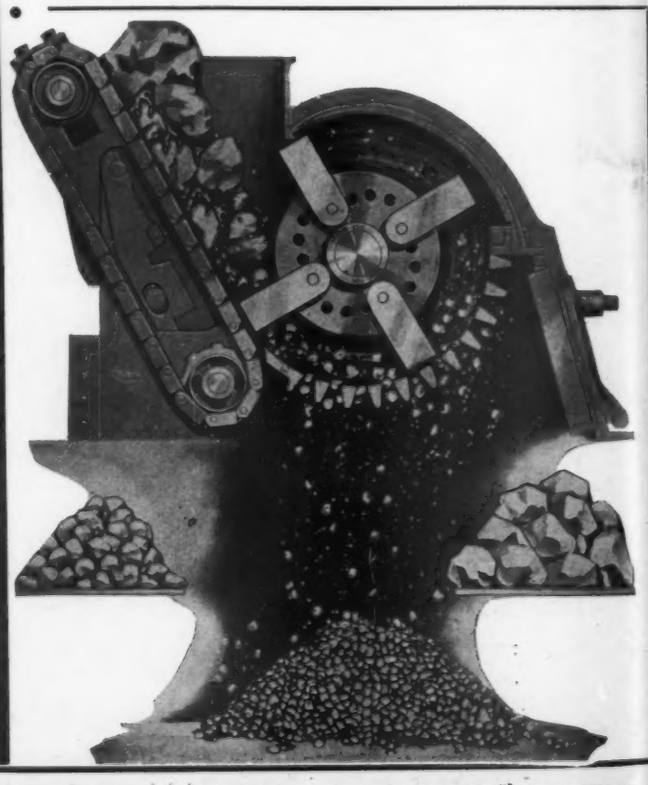
DIXIE MOGUL

NON-CLOG HAMMER MILL

Nothing to conceal here—look into this construction — note the rugged simplicity — the scientific designing and safeguards against wear — breakage and stalling. That breaker plate with 26 times average wearing area — there's something worth considering.

Think of the saving in dollars and cents there alone. You'll get large capacity at low operating cost and you can choose from 40 sizes—in any capacity —Primary—Secondary or Fine Reduction.

Write for details.



DIXIE HAMMERMILLS

DIXIE MACHINERY MFG. COMPANY
4209 Goodfellow Ave. St. Louis, Missouri

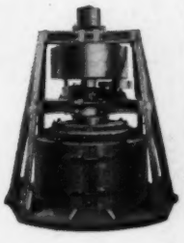
BRADLEY HERCULES MILLS, Preliminary Pulverizers, used in conjunction with Tube Mills and in some cases Air Separators, have made it possible for the Cement Industry to produce a finished product with the highest surface area which is demanded today.

DOUBLE STAGE REDUCTION has positively proved to many of the most progressive Cement Manufacturers that it is the proper manner to produce finished cement or raw material. The BRADLEY HERCULES MILL, with its great efficiency has made double stage reduction successful.

The BRADLEY AIR CLASSIFIER is the most modern separator on the market. It was designed to meet the exacting demands of the day. It can be used with most any type of pulverizer.

OUR LINE comprises many types and sizes of pulverizers and all sizes of Air Separators.

Especially adapted for the reduction or classification of cement raw material, clinker, limestone, phosphate rock, fire clay and refractory materials of all kinds.



BRADLEY PULVERIZER CO.

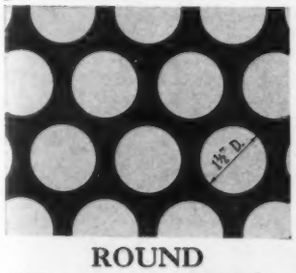
BOSTON LONDON

WORKS: ALLENTOWN, PENNA.

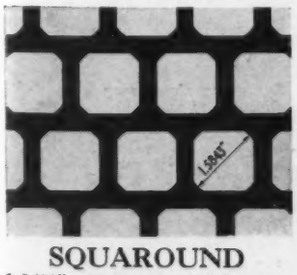
PERFORATED PLATE . . .

with the Shape of Opening Suited to the Job

BY HENDRICK



ROUND
1½" opening . . . ⅜" bar . . .
58% open area
provides the most accurate uniform sizing.



SQUAROUND
1-5/16" opening . . . ⅜" bar . . .
58% open area
strong screen plate that provides accurate sizing.

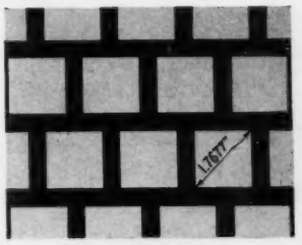
How slightly the shape of your perforated plate openings affects screen capacity, when *equivalent* sizes are compared, can be seen from the drawings reproduced here.

Despite variations in the size of the openings, plate made with any of these four shapes will provide equivalent open area . . . and deliver a product of approximately equivalent size.

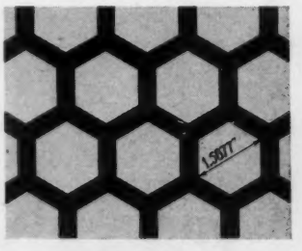
Thus it is the nature of your screening work that should determine the shape of opening to be used.

With facilities for producing any needed shape of opening, Hendrick is in position to counsel with you and recommend the most effective screening medium for your job. Consult us.

HENDRICK MANUFACTURING CO.
47 Dundaff St., Carbondale, Pa.
SALES OFFICES IN PRINCIPAL CITIES
PLEASE CONSULT TELEPHONE DIRECTORY
Makers of Elevator Buckets of all types, Mitco Open Steel Flooring, Mitco Shur-Site Treads and Mitco Armorgrids. Light and Heavy Steel Plate Construction.

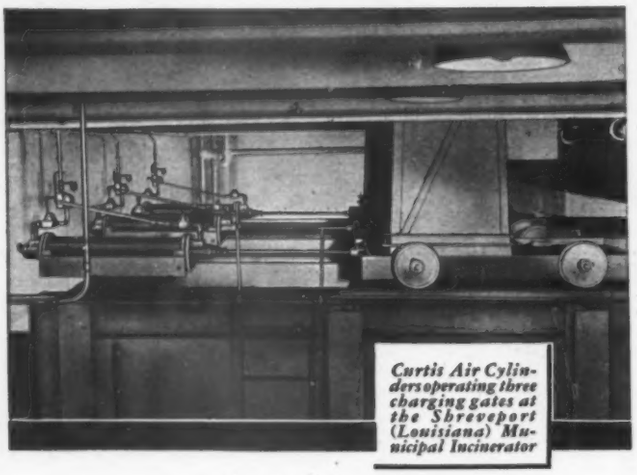


SQUARE
1⅛" opening . . . ⅜" bar . . .
59% open area.



HEXAGONAL
1⅜" opening . . . ⅜" bar . . .
62% open area
Accurate sizing . . . large open area.

Push, pull, or lift —do it for less with CURTIS AIR CYLINDERS



Curtis Air Cylinders operating three charging gates at the Shreveport (Louisiana) Municipal Incinerator

HUNDREDS of plant operations, formerly done by hand or other forms of power, are now being performed more efficiently and more economically with Curtis Air Cylinders.

Examine your plant for possible application of this modern labor-saving equipment—it has saved many manufacturers thousands of dollars. Send for performance surveys proving this.

Curtis air hoists and air cylinders are surprisingly economical. The original cost is low, the power cost is low, and the upkeep is negligible. Simple in design, rugged in construction, and made from the best of materials, Curtis Air Cylinders give dependable service for many years.

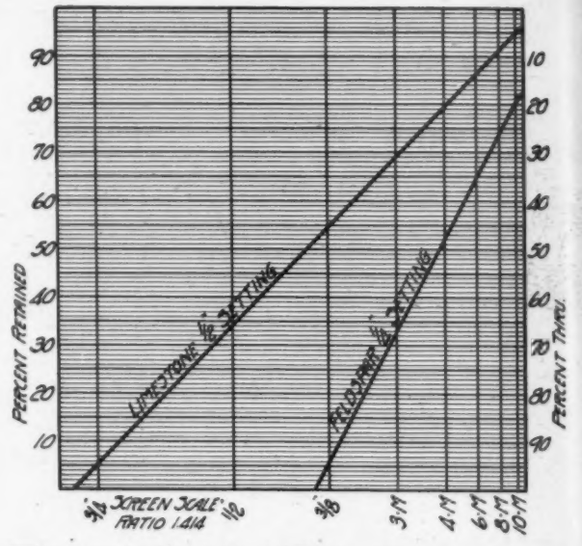
Curtis valves provide extreme accuracy and delicate control, with variable speeds as required. Curtis Air Cylinders are immune to abuse, overload and exposure to undesirable atmospheric conditions.

Perhaps Curtis can bring big savings to your plant. For further information write:

CURTIS PNEUMATIC MACHINERY COMPANY
1988 Kienlen Avenue, St. Louis, Mo.
New York City • Chicago • San Francisco

CURTIS

COMPRESSORS • AIR HOISTS
I-BEAM CRANES and TROLLEYS



PERFECT CRUSHING

The well-known axiom, "The line of perfect crushing", indicates that the closer the plotted curve approaches a straight diagonal line, the nearer the actual crushing is to the ideal.

The above curves, taken from actual tests, show a straight line, "the line of perfect crushing." The Bonnot Reduction Crusher not only approaches the straight line or the ideal, it *is* ideal or perfect. The Bonnot Company can be, and is, justly proud of this performance.

PERFECT CRUSHING means to the operator—

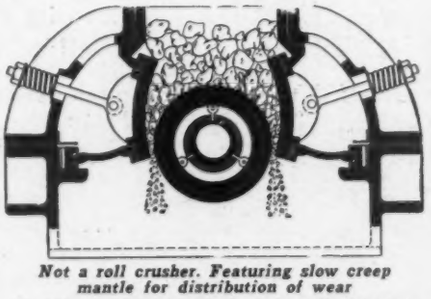
LESS MAINTENANCE; no rubbing or abrasive action to produce fines.

LESS REJECTIONS; no oversize or slabs to appear in the finished product.

LESS POWER; perfect crushing means free crushing, a beam or snap action that cuts down power—30 tons per hour of 1" minus material with less than 9 horsepower.

INCREASED PRODUCTION; slabs and oversize build up a circulating load, thus cutting down production.

INCREASED PROFITS—less maintenance, less power and increased production.



Not a roll crusher. Featuring slow creep mantle for distribution of wear

Manufactured under U. S. Patent No. 1946763

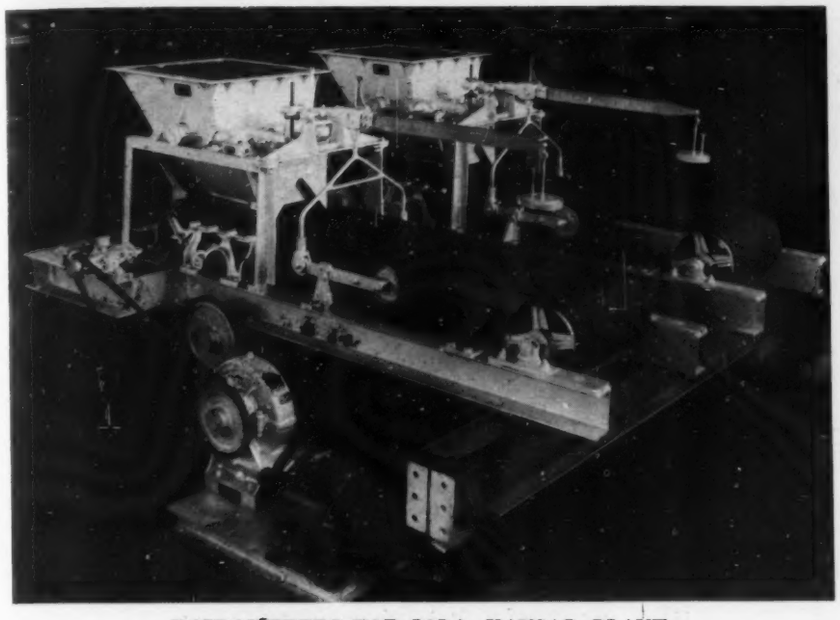
THE BONNOT CO.

CANTON, OHIO

SINCE 1891

New York Office: 50 Church Street

SCHAFFER POIDOMETERS



POIDOMETERS FOR IOLA, KANSAS, PLANT
OF LEHIGH PORTLAND CEMENT CO.

are being used by most of the leading Cement Manufacturers for proportioning raw and finish materials. Also for feeding materials into grinding mills. Poidometers accomplish this accurately by weighing and not volumetrically.

The latest Cement plant installation being four Poidometers at Lehigh Portland Cement Co. for proportioning gypsum and clinker at their Iola, Kansas, plant.

Write for Catalog No. 5

SCHAFFER POIDOMETER COMPANY

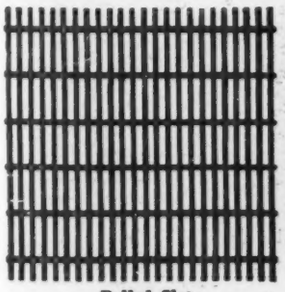
2828 SMALLMAN STREET PITTSBURGH, PA.

RESISTS WEAR — PROLONGS LIFE

"Cleveland" Screens resist wear because woven from the famous Alloy No. 2—an alloy that is saving thousands of dollars in replacement costs. A "Cleveland" Screen, therefore, actually pays for itself in dollars saved.

ALLOY NO 2

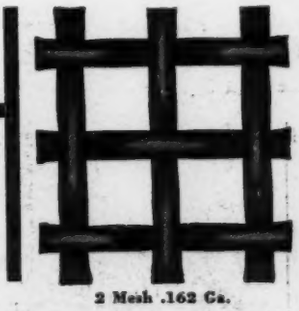
Alloy No. 2 is tough—it is able to take punishment day after day without showing any appreciable wear. No material can effect it prematurely. It is the real answer to high screen costs.



Rolled Slot

CLEVELAND SCREEN

Make your next screen a Cleveland Screen — a better, more accurate, longer-lived screen. The Cleveland will be on the job long after your ordinary screens are being hauled out.



2 Mesh .162 Ga.

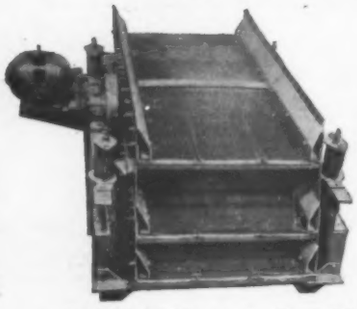
Cleveland Screen is available in Square Mesh and Rolled Slot. It is not at all expensive in first cost and you actually earn dividends on the investment.

Let us know your screen requirements. Send us that next screen order. Keep a check on the Cleveland Screen as against other screens and then figure out your saving. A Cleveland Screen protects your production as well as your profits.

THE CLEVELAND WIRE CLOTH & MFG. COMPANY

3574 E. 78TH STREET CLEVELAND, OHIO

CHAMPION SCREENING and WASHING EQUIPMENT



FEEDERS
ELEVATORS
CONVEYORS
BINS
CHUTES
GATES

Complete Plants — Portable or Stationary

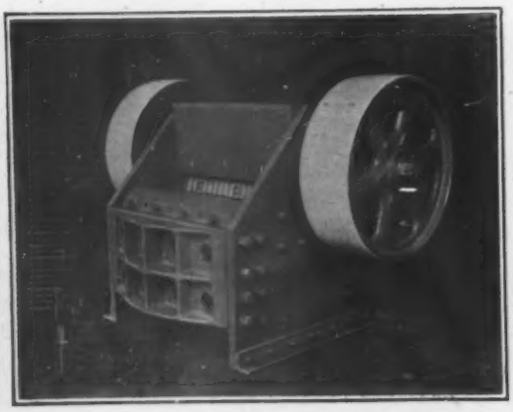
CHAMPION ROLLER-SKF-BEARING CRUSHERS

SEE THEM AT THE ROAD SHOW—SPACE E-4

Products of

GOOD ROADS MACHINERY CORP.

Kennett Square **Pennsylvania**



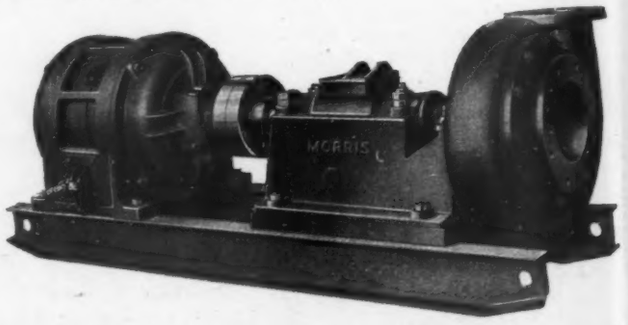
The MORRIS HYDRAULIC COLUMN

News of interest to Centrifugal Pump Users

Astronomical tonnages at microscopic costs . . . .

We once wrote to a number of customers to ask about performance records of their Morris Dredges. The result left us rather dizzy from the tremendous production figures and the tiny cost figures. Many of the dredges had each handled over a million cu. yds. of highly abrasive material without requiring any renewals. We learned of instances where sand and gravel were pumped, washed, sorted, and stocked in piles within 3 minutes after entering the dredge suction lines; where production was twice as high as expected; and where dredges had been used on upwards of four or more different jobs. Users told us of fuel costs less than ½ cent per ton of material handled, total production costs less than 10 cents per cu. yd., and renewal costs less than $10 per year over a long period. No wonder so many users of Morris Dredges refuse to consider any other make! Morris Dredge Bulletins contain many interesting performance references. A post card will bring you a copy by return mail.

What a sucker . . . .



An outstanding feature of this Morris Single Suction Pump is its ability to operate successfully on unusually high suction lifts. Even when this pump is 28 or 30 feet above the supply surface, it will hold its suction and deliver rated capacity continuously—of course, provided the water is cold. This unit could well be called our "omnibus" pump—it is adapted to so many purposes in mills, factories, process plants, for contracting work, etc. You will find it fully described in Bulletin 149—copy on request.

For authoritative recommendations on any pumping or dredging problem, write to Morris Machine Works, Baldwinsville, N. Y. Export Office, 30 Church St., New York City

Better Screening

FOR exact and careful screening of fine and coarse materials at low cost. Gives uniform vibration — no "dead" areas.

It is truly "A triumph of mechanical vibration." Send for catalog No. 1462.

LINK-BELT COMPANY

PHILADELPHIA ATLANTA CHICAGO SAN FRANCISCO INDIANAPOLIS TORONTO

Offices in Principal Cities

5365

LINK-BELT VIBRATING SCREEN

The Profitable Way to Sell Concrete

JAEGER DUAL-SPEED TRUCK MIXERS of Man-Ten Long Life Steel

Rear Lift Hoist Attachment

One-Man Chute Saves Minutes Every Trip

Write for New Catalog

THE JAEGER MACHINE CO.

603 Dublin Avenue, Columbus, Ohio

SHAY GEARED LOCOMOTIVES

...Built for Quarry Service!

THERE'S no question about the adaptability of Shay Geared Locomotives to quarry service. They are built for it.

Shay Geared Locomotives are rugged. This fits them to withstand abuse and to give continuous, dependable operation under the most severe conditions.

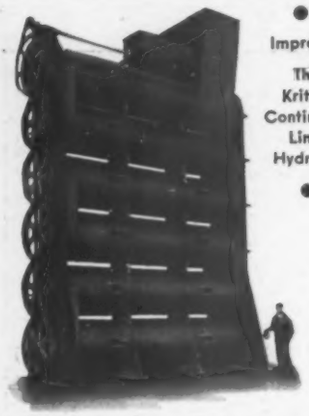
Shay Geared Locomotives have great power. Their three-cylinder engines start heavy loads quickly and pull them up hard-to-climb grades without difficulty or delay. Speedier car movement keeps quarry production at a maximum.

Because of these advantages . . . and others we will gladly tell you about . . . the Shay is the most reliable locomotive investment you can make. Write for catalog.

LIMA LOCOMOTIVE WORKS, Incorporated

LIMA, OHIO

Sales Office: 60 E. 42nd St., New York, N. Y.



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The
Kritzer
Continuous
Lime
Hydrator

HYDRATORS
By KRITZER

PERMANENCE and DURABILITY—Thirty years' constant service in many cases attest to the ruggedness and dependability of the KRITZER HYDRATOR.

ECONOMY OF OPERATION—Constant improvements and a fineness of construction insure you a highly efficient machine.

ECONOMY OF COST—THE KRITZER HYDRATORS produce a quality hydrate cheaper per ton than any other hydrators on the market today.

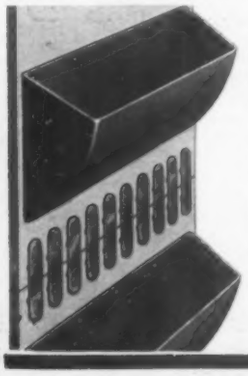
BUY KRITZER HYDRATORS and you buy maximum PERFORMANCE and SATISFACTION.

THE KRITZER COMPANY

515 W. 35th Street — Chicago, U. S. A.

•A Tight Butt Joint•

for long life of Conveyor and Elevator Belts



Note how recessed plates compress belt end. Internal friction and ply separation in belt ends is overcome. The tight butt of the belt ends prevents passage of materials or liquids through the belt. Made in steel, "Monel Metal," non-magnetic and abrasion resisting alloys. Five sizes. Sold by jobbers and belting houses. Consultation regarding belt joining invited.

Sole Manufacturers
FLEXIBLE STEEL LACING CO.
4684 Lexington Street, Chicago
In England at 135 Finsbury Pavement, London, E. C. 2

GO AFTER THOSE PROFITS
Beyond the Quarry!

The MICHIGAN Shovel not only tackles any job around the quarry but is ideal for outside jobs as well. It is fast, both on the road and in operation; its mechanism is full-revolving, with finger-tip control. . . . Easily converted into dipper—crane—dragline or clamshell. Gets in and out of spots where a larger machine would be impractical.

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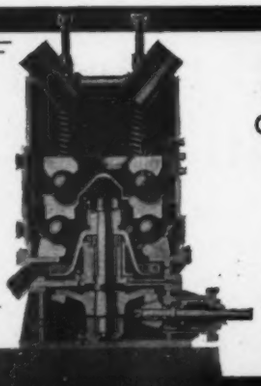
Lightning heavy-duty, ball-bearing sand and gravel pumps are competitively priced. But instead of being a rough aggregation of castings Lightning Pumps are precision made, each part carefully machined and perfectly fitted. Large wear-resisting, non-heating bearings are used in abundance. The result for sand and gravel users is high efficiency, low operating costs, and smooth operation.

KANSAS CITY HAY PRESS CO.
Kansas City, Mo.

Sand and Gravel Producers

Lightning
HEAVY-DUTY
PUMPS



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for grinding:
Cement Materials
Phosphate Rock
Limestone
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Fuller-Kinyon Transport System for Pulverized Fuel.

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BABCOCK & WILCOX

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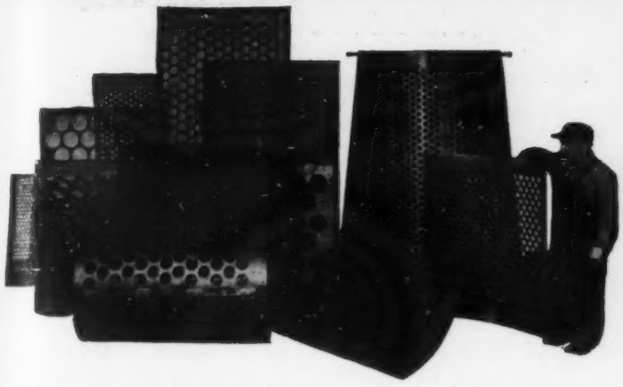

For Sand, Gravel, Stone and Ore. Perforations of all standard types, also of unusual sizes and layouts to give large production and reduced screening costs.

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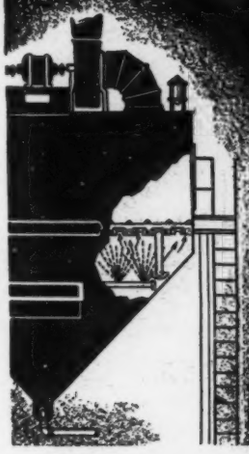
"Froth-Flotation"



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no moving parts
no wear
no repairs

● Trouble-free operation and high recovery are assured. No manual supervision. No replacement of filtering units. No fire hazard. Descriptive literature sent on request. The C. O. Bartlett & Snow Company, 6194 Harvard Ave., Cleveland, Ohio. Representatives in the principal cities.

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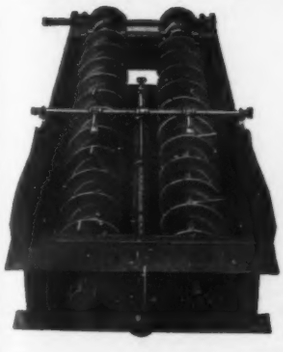
CONVEYORS • ELEVATORS • SKIP HOISTS • FEEDERS
CHAINS • SPROCKETS • DRYERS • COOLERS • SCREENS

EAGLE WASHERS



Single and Double
Spiral Screw and Log Type

Guaranteed removal of trash, sticks, leaves, coal, silt, mud-balls,—to the difficult clay-balls and iron oxide conglomerates.

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Des Moines, Iowa

Perforated Metals — Screens of All Kinds — For Sand, Gravel, Stone, Etc.

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—FOR—
CRUSHERS
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SHOVELS
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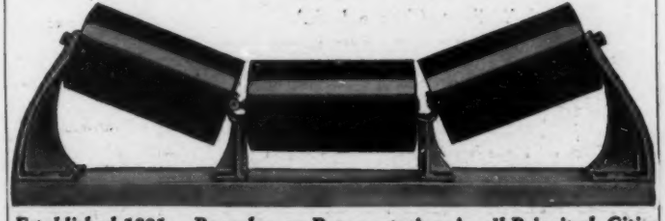

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WON'T QUIT
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CEMENTS

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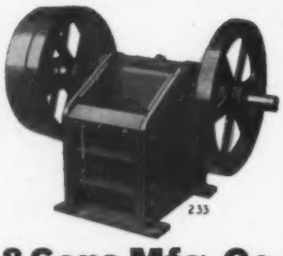
A full series from 8"x12" up. Plain bearings and roller bearings. Can be furnished mounted on trucks with or without elevator and power.

Elevating, Conveying and Power Transmission Machinery, Screens and Scrubbers, Complete Plaster Mills.



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In Williams buckets you will find many outstanding engineering achievements, all features combine to bring you bigger payloads, dependability and longer lasting service. *Write for bulletins.*

Multiple-Rope Power-Arm Dragline

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With which is incorporated CEMENT-ENGINEERING NEWS Founded 1905
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Automatic Indication and Control
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Reliable Agents Wanted

Manufactured by
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When steel is needed in a hurry you can depend upon Ryerson for quick action. Complete stocks of all kinds of steel products, including Ryerson Abrasion Resisting Sheets and Plates, bars, structurals, bolts and nuts, rivets, boiler fittings, chain, etc. Order from the nearest plant. Joseph T. Ryerson & Son, Inc., Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

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Single, Double Roll Crushers—Super Dry Pans—Steel Leg Washers and Scrubbers—Dryers—Jigs—Screens—Hoists, Elevators and Conveyors—Reciprocating Feeders, Bingates, Chutes, Turn Tables, Elevator Buckets, Car Pullers, Rail Straighteners, Cast Parts, Rough or Finished—Car Wheels and Brake Shoes, Sprockets and Sheaves, Gears and Bearings, Gratings and Columns, Chute Linings, Grate Bars of Special Heat-Resisting Metals.

Write for catalogues listed or for information concerning any of the material, machinery and castings listed, required in mine, quarry or pit.

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"NAT-ALOY"
WIRE CLOTH

START 1936

with the longest wearing wire cloth known to industry. Facts prove it lasts five times the life of ordinary steel. Specify NAT-ALOY Wire Cloth for extra durability.

ATTRACTIVE PRICES
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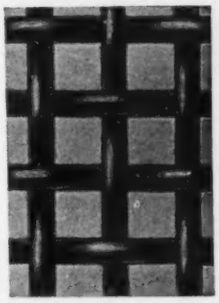

National Wire Cloth Co.
ST. PAUL, MINN.

Write for new catalog

THE ROSS FEEDER
HAS NO RIVAL

It completely controls the flow of any size material from storage bins and open dump chutes to crushers, conveyors, screens, etc.

Send for Catalog No. A4-33

ROSS SCREEN & FEEDER CO.
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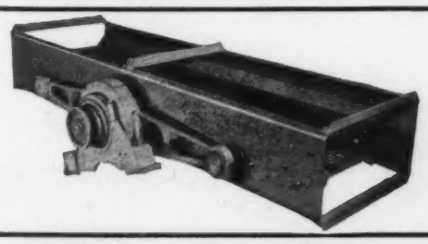
2 Victoria St. London, S.W. 1, England

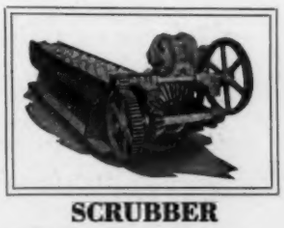
JIGGER



SCREEN

The Heavy-Duty "JIGGER"
CONTROLLED VIBRATION
Efficient — Rugged — Economical
WRITE FOR BULLETIN NO. 1233.
Productive Equipment Corporation
210 E. Ohio Street CHICAGO, ILL.

Why ship dirty stone when it can be made clean easily and so economically?



SCRUBBER

This scrubber will do the good work.

State Capacity Required!

LEWISTOWN FOUNDRY & MACHINE CO.

Mfrs. of Sand Crushing, Grinding, Washing and Drying Machinery

LEWISTOWN - - - - - PENNA

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INFORMATION
Box numbers in care of our office. An advertising inch is measured vertically in one column. Three columns, 30 inches to the page.

CLASSIFIED — Displayed or undisplayed. Rate per column inch, $4.00. Unless on contract basis, advertisements must be paid for in advance of insertion.

Used Equipment for Sale

CONSOLIDATED

ENABLES YOU TO BUY

MORE WITH THE SAME NUMBER OF DOLLARS

GOOD USED CRUSHING, PULVERIZING, DRYING AND FILTERING EQUIPMENT

Selected Special Items—

1—8'8"x85' Ruggles-Coles class A Rotary Dryer; also 5'x26' rebuilt at our shops.
4—Symons Cone Crushers, 2', 3', 5½', 7'.
1—No. 1260 Jeffrey Bakstad Jaw Crusher, 12x30" feed, 12x60" dia., to ½".
1—3 roll Raymond High Side Mill.
1—No. 1 Raymond Pulverizer with air sep.
5—Raymond Pulverizers, No. 0000,00, No. 1, 3.
1—12" Mikro Pulverizer with A.C. Motors.
1—24" Mikro Pulverizer with 40 H.P. 3 phase, 60 cycle, 440 or 550 volt d.c. motor.
8—Hardinge Ball and Pebble Mills, 4½'x 16", 6x22, 6x36, 7x36, 8x30.
1—6'x8' Patterson Ball Mill, silex, with air separator, A.C. motors, etc.
1—7'6"x5' Patterson Pebble Mill, unlined.
1—3'x12' Hendy Tube Mill, iron lined.
6—5'x22', 6x22' Gates iron lined Tube Mills.
2—6'6"x60' Vulcan Rotary Kilns.
1—7'x100' Vulcan Rotary Kiln.
3—8'x8' Oliver Rotary Vacuum Filters.
1—24x72" Magnetic Pulley, with m.g. set.
1—36"x36" Gruendler heavy duty Hammer Mill, ball bearings, No. 4-XC.
1—7"x24" Sturtevant Jaw Crusher, to ½".
2—20"x14", 36x16 Sturtevant Crushing Rolls.
6—3'x5', 4x5, 4x7 Tyler Hummer Screens.
2—Generator Sets for Tyler Screens—G4, G8.
2—4'x6', 5'x8' Niagara roller bearing Screens.
9—Rotex Screens, Nos. 14, 52, 61.
1—8' Gayco Air Separator, No. 26.

SEND FOR BULLETIN of our regular stock of Crushers; Vibrating Screens; Ball, Rod and Tube Mills; Air Compressors; Rotary Kilns and Dryers; Hardinge Ball and Pebble Mills; Raymond and other Pulverizers; Air Classifiers, Thickeners; Wet Classifiers; Filter Presses; Continuous Filters, etc.

NOTE—We buy your idle equipment for cash.

CONSOLIDATED PRODUCTS CO., Inc.

15-16-17 PARK ROW
NEW YORK CITY

Shops and Yards at Newark, N. J., cover 8 acres of ground.

2-yd. Marion 480 Shovel-Crane.
1¼-yd. Byers Shovel-Crane.
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1-yd. Koehring Crane.
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½-yd. Byers Shovel-Crane.
⅛-yd. Thew-Universal Crane.
48 Steel Stone Skips 3 and 4 yd.
Compressors: 1300, 1245, 1190, 450, 310, 265, 250, 110 ft.
Draglines and Slacklines, ½, 2 and 3 yd.
Crushers: Telsmith 13A, 40.
Electric Hoists 10, 30, 60, 80, 125 HP.
Derricks—All steel:
3 Guy 15 ton 115 mast, 100 ft. boom.
2 Stiff-leg 10 and 15 ton, 90 ft. boom.
Drill sharpener, furnace and grinder.
Orange Peel and Clamshells: 2, 1½, 1¼, 1, ⅝ yd.
Pumps: 1,000 to 5,000 gal.
3—12 ton 36" gauge gas locomotives.

J. T. WALSH
500 Brisbane Bldg. Buffalo, N. Y.

Two Robins 24"x225' Belt Conveyors.
Robins 18"x170' Belt Conveyor.
Conveyor Idlers and Pulleys, 18" and 24".
Portable 14"x24' Flat Conveyor, LeRoi.
Conveyor Trippers for 18" and 24" belt.
Telsmith 20" Plate Feeder.
Digging Truck Loader, Fordson traction.
Conveyor Belt and Elevator Buckets.
Chain Bucket Elevators, 10" and 12" wide.
Haiss and Owen ¾-yd. Clamshell Buckets.
¾-yd. Tipover Buckets and 3-yd. Grout Boxes.
Mitchell 3x8 Vibrating Screen, 3 ph., 220 v.
Buda 35 hp., 4-cyl., Gasoline Engine.
LeRoi 6 to 8 hp., 2-cyl. Gasoline Engine.
Chicago Steam Air Compressor, 10x12x10.
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Link-Belt Coal Crushing Rolls, teeth.
Kennedy No. 37 Gearless Gyratory Crusher.
Ingersoll-Rand No. 33 Leyner Drill Sharp'r.
Backhoe & Skimmer Attach. for Bearcat.
Double 2" Diaphragm Electric Pump, 110 v.
Humphreys 4" Force & Trench Pump, LeRoi.
Goulds 8" Centrif. Pump, Electric, 22 hp.
Swivel 24" Gauge End Dump Cars, ¾-yard.
V-shaped Steel Cars for 24" and 36" Gauge.
Portable 24" Gauge Track and Switches.
Hoists: Gasoline, Electric and Steam.
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Johnston 50 hp. Locomotive Boiler, 125#.
Ingersoll-Rand Air Compressor, ER-1, 9x8.
Air Drills, Jackhammers and Drill Steel.

G. A. UNVERZAGT
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MUST MOVE

Several Steel Buildings (Modern)

2—Smidth Tube Mills, 5'x22'.
2—No. 80 Bailey Feeders.
1—No. 6 Williams Crusher.
2—Dings No. 2 Magnetic Separators.
2—No. 57 Fuller Lehigh Mills.
1—AC Gates 4K Gyr. Crusher, 8x30.
2—Penn S-7 Hammer Crushers, 36x16.
1—AC McCulley Crusher, 10x52.
1—Goodman No. 48 u/g Elec. Shovel.
1—25-T Loco. Crane, 50' & 75' Booms.
1—5-yd. Williams Clam Bucket.
2—80 c.f., 5-ton Hulett Buckets.
3—1½-yd. Brown Ore Buckets.
2—0-6-0 50-ton Baldwin Locos.
20- and 30-yd. Dump Cars.
50-ton Gondola and Hopper Cars.
All types of Crushers and Equipment.

IRON & STEEL PRODUCTS, Inc
657 RAILWAY EXCHANGE, CHICAGO

ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C., for sale at attractive prices. New and Rebuilt. All fully guaranteed. Write for List and Prices.

V. M. NUSSBAUM & CO.,
Fort Wayne, Indiana

FOR SALE

24" Symons Disc Crusher, 12"x24" Champion Jaw Crusher, Barber Green 20' center by 20" belt conveyor, Fairbanks-Morse 6" Centrifugal Electric Pump. Equipment in excellent condition and priced to sell immediately.

MARIBEL GRAVEL CO., Maribel, Wis.

CARS

12-Yd. Western Air, also Hand Dump Cars, Flats, Gondolas, Steel Hopper Cars, Box Cars, Locomotives.

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20 N. Wacker Dr. Bldg., Chicago, Ill.
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ECA REBUILT

QUARRY, GRAVEL PLANT & CEMENT MILL EQUIPMENT

Really Rebuilt—with a REAL GUARANTEE

AIR COMPRESSORS

2—Ingersoll-Rand horizontal 2-stage. 1—1245 cu. ft. with 200 or 300 HP., 2200 V., G. E. syn. motor. 1—870 cu. ft. with 150 HP. G. E. slip ring motor.

3—Single stage: 3 horizontal including 1 Sullivan 518 ft. Class WG6, 1 Chicago Pneumatic Tool 350′ NSB, Ingersoll-Rand 92′ ER-1.

1—G. E. centrifugal compressor, 9000 cu. ft. at 2 lbs. pressure, direct connected to 120 HP. G. E. A/C 220 V. motor.

3—Low pressure: 1—I. R. 1130 cu. ft. capacity at 40 lbs., direct connected to 108 HP. Diesel engine. 1—Sullivan W.G.-6 horizontal 1151 cu. ft. capacity 30 lbs. pressure with 125 HP. G. E. motor. 1—Bury Class L 1000 cu. ft. 30 lbs. pressure with 75 HP. G. E. motor.

15—Portable, gasoline driven; cap. 21, 92, 118, 210, 240, 310 cu. ft. Ingersoll-Rand, Sullivan, Chicago Pneumatic, Schramm Domestic and Metalweld.

BINS

9—Bins: 2—Butler; 1—135-yd. 3-compartment; 1—75-yd. 2-compartment with scales; 5—Blaw-Knox; 2—117-ton; 1—72-ton; 1—50-ton; 1—35-ton 2-compartment with or without scales. 1—54-yd. Johnson; 1—Johnson 300 bbl. cap. fully enclosed cement bin with scale.

CARS

Standard gauge: 8—Western 20 yd. air dump; 7 Koppel 6 yd.

42″ gauge: 48 Koppel 2½ yd. all steel one way side dump.

36″ gauge: 67 Koppel, Western and Continental 5 yd. two way dump; 16 Continental 2 yd. two way dump; 6 Koppel 6 ton flat.

24″ gauge: 45 Koppel and Western 1½, 1 and ½ yd. V-shaped dump cars.

40—24″ gauge: Lakewood and Koppel 10,000 lb. cap. roller bearing flat cars.

CONVEYORS AND ELEVATORS

9—Port. Belt Conveyors with steel frame, gas or elec. power 18″ and 24″ Barber Greene and Chicago Automatic.

6—Weller, Chain Belt and Link-Belt vertical bucket elevators on chain or belt, all lengths and capacities up to 175 yds. per hour.

CRANES AND DRAGLINES

1—Northwest Type M, Serial No. 2334, 60 ft. boom, 1½ yd. dragline or clamshell bucket.

1—Northwest Mo. 104, Serial No. 2079, 45 ft. boom; 1¼ yd. bucket.

1—Industrial Brownhoist, Type D.C., Ser. No. 5176, 40′ boom crawler crane with Buda Diesel engine.

1—Link-Belt K-25, Ser. No. 1521, with 40′ boom crawler crane.

1—Link-Belt gasoline, Model K-1; 10 ton 50 ft. boom; shop No. K-1024.

1—Erie Type B-2 steam crane No. 3900; 40 ft. boom.

1—Brownhoist No. 2 gasoline crane; 10 ton cap.; 40 ft. boom; shop No. 9964.

1—Industrial Brownhoist, type CC crawler crane, 36 ft. boom, ½ yd. cap. Shop No. 5071.

CRANES (Locomotive)

1—30-ton American, No. 1470, 70 ft. boom, 8-wheel MCB trucks.

1—30 ton Ohio No. 3367; 50 ft. boom on 8 wh. MCB trucks.

1—25 ton Ohio No. 1780; 60 ft. boom on 8 wh. MCB trucks.

1—25 ton American No. 1558; 50 ft. boom on 8 wh. MCB trucks.

1—25 ton Industrial Type G—No. 4361; 50 foot boom on 8 wh. MCB trucks.

CRUSHERS

1—Symons coarse cone crusher, size No. 5½, SU No. 521; capacity 450 tons per hour of 2½″ material—130 tons per hour of ½″ material; weight 85,000 lbs.

1—Set Power and Mining Machinery Co. crushing rolls, size 42″x16″; rated capacity 15-20 tons per hour of ⅜″ material; weight 41,000 lbs.

1—24″x36″ Farrell jaw crusher in first class condition. Wt. 41,000 lbs.

1—No. 6 Champion jaw crusher, No. U-1075-4; jaw opening 12″x6″; capacity 24-35 tons per hour of 2″ material; weight 20,000 lbs. Like new.

2—No. 3 McCulley gyratory crushers; size of each opening 7″x28″; capacity 25 tons per hour of 2¾″ material; 11 tons per hour of 1¼″ material; weight 17,000 lbs.

DERRICKS

3—Steel Stiff Leg: 1—10 ton Insley, 80′ boom; 1—10 ton American, 80′ boom; 1—5 ton Modern with 50′ boom.

12—Wood stiff leg derricks: All sizes up to 10 ton.

11—Steel Guy: 1 Terry 15 ton, 90′ boom; 9 American 15 ton, 100′ boom.

1—10 ton Dobbie 70 ft. mast, 58′ boom, bull wheel.

HOISTS

65—Gasoline, Steam and Electric, including 1 Thomas 150 HP. Special Class L 2-speed electric cableway excavator hoist. Will handle 2 yd. bucket.

LOADERS

2—Barber-Greene Model 42-A Crawler mounted bucket loaders. Cap. 1¼ yd. per min.

LOCOMOTIVES

Gas: 2— 12 ton Plymouth 36″ gauge, 10—8 ton Vulcan St. ga. 3—8 ton Plymouth 36″ ga. 3—7 ton Whitcomb 36″ ga. 3—3 ton Brookville St. ga.

13—24″ gauge gas locomotives; 5—7 ton Plymouths; 4—7 ton Whitcombs; 3—4 ton Plymouths; 1—3 ton Plymouth.

2—Steam locomotives: 1—Porter 20-ton No. 6753 36″ gauge; 1—Davenport 19 ton No. 2036 standard gauge.

PNEUMATIC TOOLS

4—Gardner Denver wagon or derrick drills with model 21 or 17 Gardner drills for channelling.

80—Ingersoll-Rand X-71, S-49, DCR 23, Gardner Denver Models 21, 17 and 37, Sullivan FG3, jackhammer, column and tripod drills.

PUMPS

100—Centrifugal pumps—gas, electric and belt driven, all sizes; also diaphragm, gravel and dredging pumps. All sizes.

SCREENS

2—P & M Roller type, 48″ by 18′ long.

1—Allis Chalmers, roller type 51″ dia. by 21′ long.

1—Good Roads 30″ dia. x 12′ roller type.

1—S. & A. double deck 3′x6′ vibrating screen.

SHOVELS

1—Northwest Model 105 combination shovel and crane No. 1846, ⅞ yd. shovel dipper, 40 ft. crane boom.

1—Industrial Brownhoist Type D.C., Ser. No. 5176, Buda Diesel engine.

1—Link-Belt K-25, Ser. No. 1521, 23-ft. boom, 16-ft. dipper stick, ¾-yd. dipper.

3—Link-Belt shovel attachments for Models K-55, K-44, K-42, K-38, K-25 or K-2.

TRACTORS

8—Tractors: 3—Monarch 75's; 3—Caterpillar 60's; 2—Caterpillar 30's with bulldozers.

EQUIPMENT CORPORATION OF AMERICA

THREE REBUILDING PLANTS

CHICAGO, 1119 South Washtenaw Avenue
PITTSBURGH, P. O. Box 933
PHILADELPHIA, P. O. Box 5419 Kingsessing Sta.

(Classified Advertising Continued on Next Page)

Continued from Preceding Page

USED EQUIPMENT

HERE THEY ARE READY TO SHIP

15-N Allis-Chalmers Gyratory, Tex Rope Drive to 150 HP. A.C. Motor.
9-K Gates Gyratory.
16-A Telsmith Gyratory.
Nos. 1, 3, 4, 5, 6, 7½ Gates Gyratories.
No. 40 Telsmith Reduction Gyratory Crusher.
18", 24", 36", 48" Symons Disc Crushers.
10x20 Jaw Crusher, All Steel Frame, Manganese fitted, with or without 4-Wheel Gooseneck Trucks.
11x36 Jaw Crusher, Manganese fitted.
6", 8", 10", 12", 15", 18" Manganese Steel Sand and Gravel Pumps.
5'x11' Marcy Rod Mill.
No. 2 Williams Semi-Vulcanite Hammer Mill.
30-36 American Ring Roll Pulverizer.
42-42 American Ring Roll Pulverizer.
42-61 American Ring Roll Pulverizer.
3—Large Jeffrey Hammer Mills, Ball Bearings.
5'x40', 5'x60', 7'x70' Direct Heat Rotary Dryers.
4—4'x15' Hot Air Rotary Dryers.
20, 35, 50, 60, 80, 120 H.P. Gasoline Hoists, 1, 2, 3 Drums.
3—110 CFM. Portable Air Compressors.
2—678 CFM. I-R type XCB Compressors, Complete Equipment.
750', 1250' I-R Steam Compressors.
5, 10, 25, 50, 75, 100 H.P. Electric Hoists.
½, ¾, 1, 1½, 2 Yd. Sauerman Drag Scraper Outfits.
½, ¾, 1, 1½, 2 Yd. Sauerman Cableway Outfits.
3—Model 42 Barber-Greene Loaders.
2—24"x60' Barber-Greene Portable Belt Conveyors.
118 Ton Blaw-Knox Steel Storage Bin.
41-B Bucyrus Steam Crane.
Model 37 Marion Comb. Steam Shovel and Crane.
Send for Bulletin No. 95—Over 2,000 items excellent used, rebuilt and surplus new equipment.

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Chicago warehouses located at 20 N. Jefferson Street, and 526 W. Eighteenth Street.

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1 BUCHANAN CRUSHER complete.
Size 30"x42" Type C, A-1 condition, extra jaws.
Also 1 set 36"x16" Sand Rolls and 1 set 14" x 24" Sand Rolls.
All located in Denver.

Gordon Construction Co.
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42-inch by 20 ft. Dryer.
No. 4 Bonnot 4 x 22 Tube Mill.
Traylor 6 x 8 Tube Mill.
750-yd., 1250-yd. and 2000-yd. Asphalt Plants.
2—1¼-yd. Thew Steam Shovels.
1-yd. Erie B-2 Steam Shovel.
Northwest Model 105 Crane.
100 H.P. Lambert 3-Drum Elec. Hoist.
2—2-yd. cap. Bucyrus Diesel Draglines.
½-yd. Speeder Caterpillar Crane.
Champion 1030 and 1040 Roller Bearing Jaw Crushers.
42 x 36 Allis Chalmers Jaw Crusher.
Pennsylvania SX4, SX6 and SXT12 Hammermills.
Clyde Lime Hydrator.
Raymond Size O Lime Pulverizer.
Keystone Gasoline Operated Well Drill.
3—870-ft. XCB Air Compressors.
Superior 10-in. and 36-in. McCully Crushers.
Traylor 4—10TZ Reduction Crusher.
24x36, 18x36, 13x30 Farrel Jaw Crushers.

R. C. STANHOPE, Inc.
875 Sixth Ave. **New York, N. Y.**

USED EQUIPMENT

LOCOMOTIVES

3—50-ton American 4-wheel saddle tanks, 16x24" cylinders. All have Code boilers.
4—40-ton American 4-wheel saddle tanks, 14x22" cylinders. All have Code boilers.
2—38-ton Porter 4-wheel saddle tanks, 14x20" cylinders; Code boilers.
1—70-ton Baldwin 6-wheel Switcher with separate tender, 20x26" cylinders, Code boiler.

LOCOMOTIVE CRANES

1—50-ton Industrial 8-wheel, 75' boom.
1—25-ton Browning 8-wheel, 50' boom.
1—20-ton Industrial 8-wheel, 50' boom.
All have Code boilers.

Complete stock list furnished on request.

BIRMINGHAM RAIL & LOCOMOTIVE COMPANY
BIRMINGHAM, ALABAMA

FOR SALE

12—5-yd. 36" ga. Western Dump Cars.
6—2-yd. 36" ga. Koppel Steel V Dump Cars.
4—1½-yd. 36" ga. Insley Steel V Dump Cars.
2—3½-ton 36" ga. Whitcomb Gasoline Locomotives.
1—9x10 Sturtevant Vertical Steam Engine.
1—10x10x12 Ingersoll Steam-Driven Air Compressor.
1—9x10 Lidgerwood 3-Drum Steam Hoist.
1—8¼x8 Lidgerwood S.D. Steam Hoist.
22—12-yd. Western std. ga. Air or Hand Dump Cars.
2—40-ton Baldwin S.T. Locomotives, 14x22 cyls.
Rails—First-Class Relay Rails and Bars, 60, 70, 80, 85, 90 and 100 lb. Rails, Tie Plates, etc.

HYMAN-MICHAELS CO.
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FOR SALE

1 7" Newhouse Crusher
Price Reasonable for Quick Sale

Address Box 706, care of Rock Products, 330 S. Wells St., Chicago, Ill.

FOR SALE—Two Telsmith No. 3 Gyratory Crushers. Two Sauerman Complete Slackline Cableways, including 1-yd. and ¾-yd. buckets. One Clyde Single-Speed, Double-Drum Steam Hoist. One 65-ft. Steel Mast. Three—one 5", two 3" Steam Pumps. Two Houston, Stanwood, Gamble 90 H.P. Boilers. Excellent condition—no reasonable offer refused.
Louis Ebbe Gravel Co., Waupaca, Wis.

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ALL SECTIONS

Also contractors equipment, "V" shaped and Western cars, 24 and 36-in. gauge, portable track, gas locos, frogs and switches. Attractive prices quoted, wire for quotations.

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Link-Belt Shaw Classifiers
4-24 inch
1-30 inch
Priced reasonable for quick sale.
TERRE HAUTE GRAVEL COMPANY
Terre Haute, Indiana

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SLIGHTLY USED

I have exceptional bargains in slightly used and new equipment located throughout Canada and the United States. Let me know what you need no matter what it is, and I will quote on all suitable items I have in your territory. Some of the items available (many sizes, types and makes) are:

Barges	**Derricks**	**Mills**
Boats	**Draglines**	**Mixers**
Buckets	**Dredges**	**Motors**
Boilers	**Drills**	**Pulverizers**
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Cars	**Excavators**	**Pumps**
Compressors	**Elevators**	**Rail**
Conveyors	**Hoists**	**Scales**
Channelers	**Generators**	**Slacklines**
Cranes	**Kilns**	**Shovels**
Crushers	**Loaders**	**Tractors**
Dryers	**Locomotives**	**Etc.**

I Can Sell Your Surplus Equipment
ALEXANDER T. McLEOD
7229 Rogers Ave. **CHICAGO, ILL.**

Jaw Crushers—2"x4" up to 66"x84".
Crushing Rolls—12"x12" up to 54"x64"—Gyratory Crushers.
Ring Roll Mills — No. 0 and No. 1 — Swing Hammer Mills.
Rotary Fine Crushers—No. 1, No. 1½, No. 2.
Direct Heat Rotary Dryers—4'x30', 5'x30', 5½'x40', 6'x50', and 3½'x25'.
Semi-indirect Heat Dryers, 4'x30', 4½'x26', 5'x30' and 8½'x75'.
Cement Kilns—3' up to 8' diameter.
Hardinge—Marcy & Fuller—Lehigh Mills.
Raymond Mills—No. 00, No. 0 and No. 1.
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Complete drying and asphalt mixing plants.
2—8'x72" Hardinge Mills—90% new.
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Power Plants, DC and AC Motors, Generators, Transformers, Pumps, and Elec. Instruments. Give us the opportunity of bidding. NOTE: We carry a diversified stock, and your inquiries will receive immediate attention, satisfaction guaranteed.
SUPERIOR ELECTRIC MACHINERY CO.
253 North Third Street **Philadelphia, Pa.**

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30 Brand New Gasoline Engines, from 20 to 70 HP. Priced from $45.00 up.
2 New Crawler Tractors.
1 Electric Welder, gasoline powered.
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24" x 150' Belt Conveyor.
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Drag Scrapers and Slacklines, all sizes.
Other Miscellaneous Plant Equipment.
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20 and 40 Ton Steam Loco. Crane.
No. 37 Kennedy Gearless Gyratory.
12x26; 24x28 and 42x36 Jaw Crushers.
1, 2, and 3 yd. Diesel and Elec. Shovels.
120, 240, 360, 560 HP. Fairbanks Diesels.
400 KW. Skinner Universal Uniflow set.
MISSISSIPPI VALLEY EQUIPMENT CO.
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Crushers, Motors, Generators, Rail, Pipe, Cars, Locomotives, Cranes, Buckets.

Take advantage of the Opportunity offered in the Used Equipment Department to dispose of the equipment that you no longer need.

CLASSIFIED ADVERTISEMENTS

USED EQUIPMENT WANTED

WANTED—Several Raymond or Williams roller mills of various sizes to be rebuilt for export. Condition immaterial, but must be cheap for cash. Describe fully. Address

Box 696 care of Rock Products
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WANTED

1¼ or 1½ yard Electric or Gasoline Shovel. Must be late model and in excellent condition.

Address Box 701, care of Rock Products 330 South Wells St., Chicago, Ill.

Wanted to Rent or Buy—Five to seven portable or semi-portable Rock Crushing outfits with elevator, screen bin and steam or gasoline power. Send complete details, price, location. Rental period four months.

SERVICE SUPPLY CORPORATION
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WANTED

10 or 15 Western or Koppel 5-Yard Side Dump Cars, 36" Gauge.
2—12 to 14-ton Plymouth Locomotives.

DIXIE LIME PRODUCTS COMPANY
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WANTED TO BUY

Troughing and return idlers—either plain or roller bearing and foot and head pulleys for one 24"-160' long and one 24"-140' long belt conveyor. Reply to Box No. 711, care of Rock Products, 330 S. Wells St., Chicago, Ill.

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USED FULLER KINYON PORTable and Stationary Pumps. State condition and extra parts, if any. Address Box 703, care of Rock Products, 330 South Wells St., Chicago, Ill.

WANTED

Will purchase in any condition: Sturtevant Balanced Crushing Rolls. Either 4' or 5' Allis Chalmers Ball Mill. Several Small Horizontal Vibrating Screens.

Address Box 708, care of Rock Products, 330 South Wells Street, Chicago, Ill.

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1 4-Ft. Symons Cone Crusher (Coarse Bowl) with
Drive, Motor and Starting Equipment, if available

Address Box 705, care of Rock Products, 330 S. Wells St., Chicago, Ill.

ROCK PRODUCTS is the business journal of the rock products industry; its readers are men of influence, and their buying power is big. An advertisement in this classified department will be seen and read. Make your wants known and see how quickly they will be satisfied.

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ROCK CRUSHER PLANT FOR SALE

Produces from 75 to 80 yards per day. Doing nice local business. Selling account of sickness. Write **P. O. Box 484, Gastonia, N. C.**

Pacific Coast Sales Engineer open for line comparable to Cement, Lime, Gypsum, Grinding, Gravel and Contractors' Concerns in Western States including Western Canada. Salary, Commission or both. Have traveled territory for last ten years. Experienced in Mill Construction and Machinery installations. Available after January fifteenth. Address **Box 700**, care of Rock Products, 330 South Wells Street, Chicago, Ill.

Representatives wanted to sell on commission basis a high grade wire cloth used extensively in sand, gravel, stone, coke plants, cement mills, etc. Address Box 707, care of Rock Products, 330 S. Wells Street, Chicago, Ill.

POSITIONS WANTED

POSITION WANTED AS SUPT. WITH A progressive stone company; 20 years' experience operating limestone quarries and crushing plants; familiar with all modern equipment, efficient handling of labor with record of low cost of production; qualified to assume full charge of any size plant or plants; unquestionable references. Open for engagement. Address Box 654, care of Rock Products, 330 South Wells St. Chicago, Ill.

POSITION WANTED: MAN 45 YEARS OF age, open for position as superintendent of operations in the mineral aggregates business where cheap production costs are essential. My experience has been from the bottom to specifying, designing and building the largest of crushing plants. Unquestionable references. Address Box 709, care of Rock Products, 330 South Wells St., Chicago, Ill.

GENERAL CEMENT PLANT OPERATOR—Qualified to assume full charge of any size plant. 18 years' actual experience laboratory, quarry, mill, kiln, packing, maintenance, and construction foreman. 8 years full charge of all plant operations, maintenance and control of 8,000-barrel plant. Location and position to start immaterial. Address Box 603, care of Rock Products, 330 South Wells Street, Chicago, Ill.

POSITION WANTED AS QUARRY FOREman with cement plant or crushing plant. 25 years' experience operating limestone quarries. Familiar with all modern equipment. Efficient handling of labor and low cost of production. I am expert in the handling of explosives and drilling. Qualified to handle any size plant, unquestionable reference. Address Box 712, care of Rock Products, 330 S. Wells Street, Chicago, Ill.

POSITION WANTED—FIRST-CLASS MAN, now employed, 20 years' experience erecting and operating lime and crushing plants, quarries in all kinds of stone, low cost production guaranteed; capable taking entire charge, of any proposition as mgr. or production supt.; honest, sober, industrious; any location, moderate salary, opportunity wanted to advance. Address Box 713, care of Rock Products, 330 South Wells St., Chicago, Ill.

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POSITION OPEN

Superintendent familiar with production and processing or fabricating rock wool for the general market. State experience and salary expected.

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GOT A GOOD THING FOR A GOOD MAN with experience in lime and crushed stone—especially fine grinding. Big quarry, fine quality, and a dandy market with best freight rates in the territory. Must have money enough to take interest in the business and management goes along. Address Box 710, care of Rock Products, 330 South Wells Street, Chicago, Ill.

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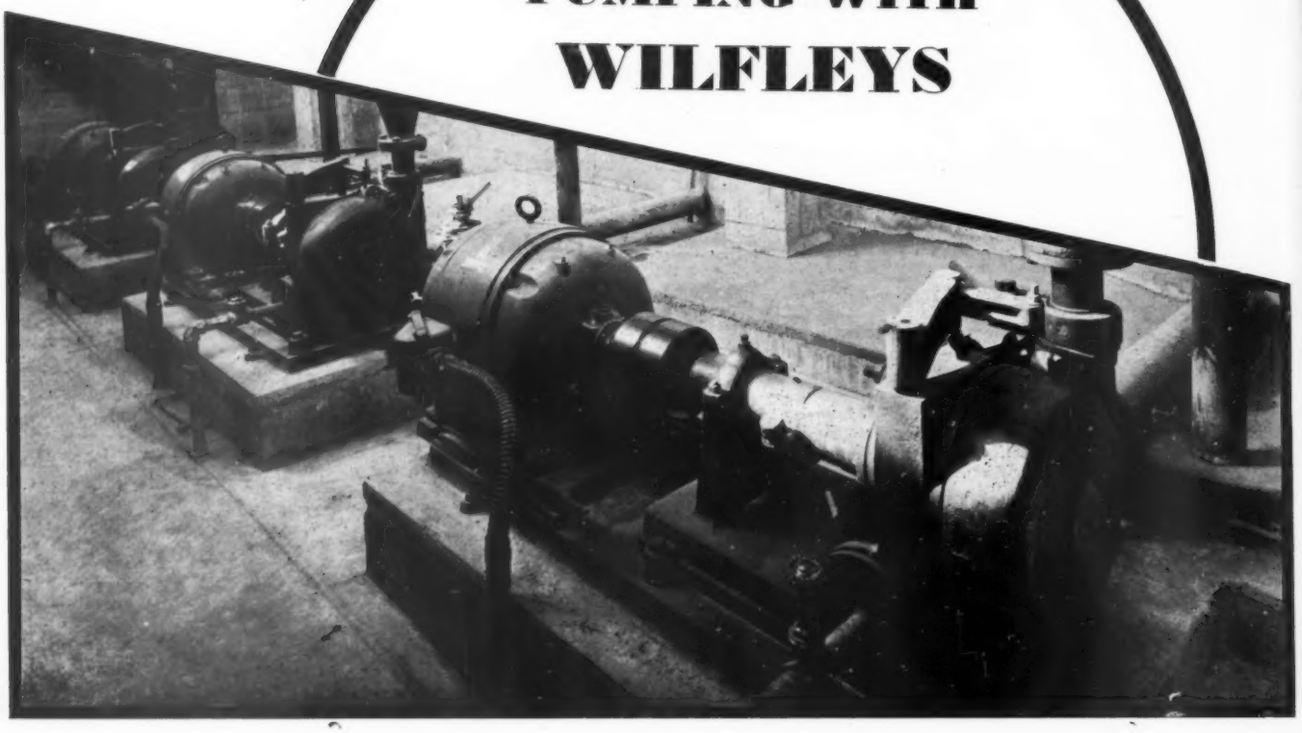

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If performance means anything, wet process mills not now equipped with Wilfley Slurry Pumps should find in these units a sure way to cut production costs.

These pumps run for weeks and months without attention except occasional oiling and infrequent takeup of the clearance, an easy adjustment to make. The design is simple with nothing tricky to get out of order. Pumping parts are extra heavy, assuring long life, and when the parts do have to be changed it takes only 10 to 15 minutes.

Wilfleys are now in 75% of the wet process cement plants.

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